

## Services firms ready for actions

by John Kavanagh  
COMPUTING services companies are gearing up to face new consumer protection laws and taking soliloquies on board. A growing number of first-time users are going to court over system contracts, and all leading services companies now have full-time legal people working on contracts, litigation and software piracy.

The new rules come under the Supply of Goods and Services Act, which in July extends consumer protection from products — now covered by the Sale of Goods Act — to services. The Department of Trade says the fact that the provision of services will be covered by an Act of Parliament will make it far easier for consumers to take their grievances to court.

"This could have significant impact because at present disputes revolve largely around the wording of contracts," said Douglas Eyskens, director-general of the Computing Services Association.

Bill Jacot, director of London-based consultancy DBA Computer Services, said despite these contracts users could find them-

selves unprotected. "Few first-time users bother to read their contracts, so suppliers naturally tend to word the contracts in their own favour," he said.

Eyskens said the Act could help users buying turnkey systems. Legal people could argue that a turnkey system supplier was providing a service by adding software to some hardware, he said. "They could argue that the product — the hardware — was working as it should. But this Act will now also cover the software part."

Leading software firms, including Logica and Seicon, confirmed that they had taken on or expanded their legal departments in the last year.

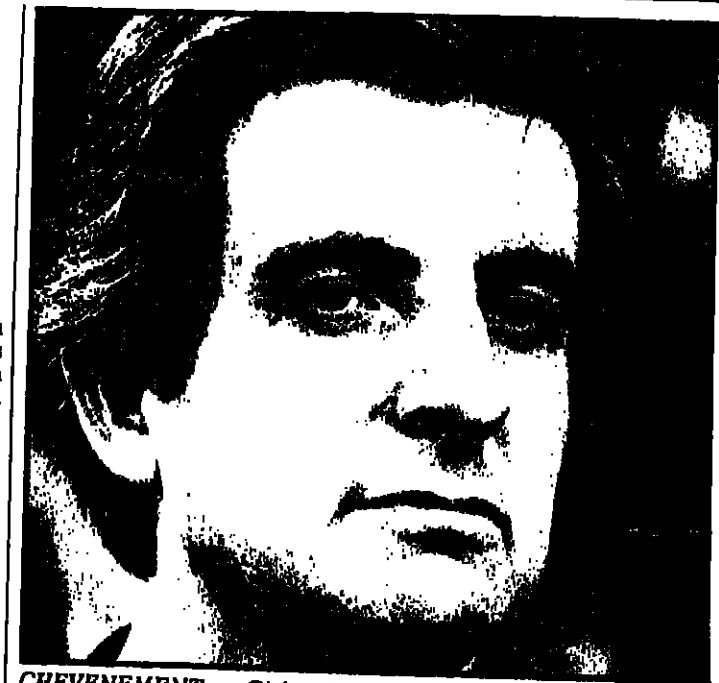
"There is more litigation now than ever before," Eyskens said. "In a recession people want to make sure their investments are paying off. At the same time the industry is growing very quickly. And micro and minicomputer users have had their expectations raised by all the talk of computing."

Jacot at DBA agreed. His firm has set up a section to help lawyers involved in computing cases. "In all the cases we have advised on there has been an element of the user not fully appreciating what was involved in moving to a computer," he said.

Jacot said 90% of the cases it had been involved in had been started by users. But they were not all small first-time users. They ranged from a large city institution and an international company to a small firm selling stamps.

The new legislation was welcomed guardedly by users. "We're in favour of anything that strengthens our arm," said George Goodwin, an officer of the IBM users association.

"But litigation must always be a last resort. Normally the supplier is anxious to leave a good impression and the user is anxious to sort things out, so the two sides work closely together on a problem. But once the user goes to court that cooperation goes out of the window."



CHEVENEMENT... Giving priority to distributed systems.

## Cii HB promises profit in return for govt cash

by Jack Gee  
AILING computer firm Cii Honeywell Bull is the first of France's nationalised groups to receive its 1.55 billion franc (£155 million) share of the Ffr 20 billion (£2 billion) which the French government is allocating this year to the loss-making industry sector.

Jean-Pierre Chevenement, Minister for Research and Industry, went to Cii Honeywell Bull's Paris headquarters to sign a contract for the cash payment in return for commitments by chairman Jacques Stern to an ambitious development and manufacturing programme.

France's electronics and computer makers are receiving only a relatively small share of the funds earmarked for the State sector in 1983. Thomson-CSF will get Ffr 16.6 billion (£1.66 billion). Compagnie Generale d'Electricite, the only group to turn in a handsome profit, will collect Ffr 870 million (£87 million).

Remarkingly, however, the meagre sums available for high technology industry, Chevenement said: "It's up to the firms which consider they are not getting enough to manage. That's what independent management means."

The Minister was making a side comment on recent criticism from President Francois Mitterrand who, after a private lunch with the chief executives of the state firms, told Chevenement to

## Commodore sales shows cover the entire UK

by Robert Parry  
COMMODORE, top seller in the UK micro market, is driving its message home with a vengeance. Today (Thursday) is the second of two days of concentrated drive-off, involving all 154 of Commodore's UK dealers in the country's first distributed show.

The country is covered by Truro to Tayside, from Swindon to Suffolk, with dealers demonstrating the latest Commodore offerings — the 700 series, the 800 and the reborn 8000 series from hotel exhibition centres. The aim is to take the effort out of finding out about Commodore.

The shindig is costing Commodore and its dealers over £250,000, of which £100,000 is coming from Commodore for national advertising of the show.

Meanwhile Hewlett-Packard has been active on the advertising exhibition front too. Last week staged a personal Computer Expo in London's Barbican Centre, pulling in around 5,000 computer and scientific professionals to HP's version of the personal computer story.

The event, backed up by HP and press advertising, is part of HP's scheme to convince people that it is serious about personal computers, from portables like the HP 75C right the way up to its HP 9000. It seems to have been a success, according to a Hewlett-Packard spokesman, who reported a good level of business — including some for the HP 9000 — for the company and the 40 software suppliers also taking part.

Apple too is getting into the dedicated show game with its exhibition in Manchester in March.



JOHN RILEY... "Now we can get on and do the job properly."

## State control threat irks UK contract workers

by John Riley  
A SHOCK amendment to an already controversial European Bill on temporary workers has outraged UK data processing agencies with its demands for a public sector monopoly of contract employees.

The amendment came from the influential 30-strong European Parliamentary Committee on Social Affairs and Employment, which has been charged with studying and amending a directive on temporary workers, proposed last year by the European Commission.

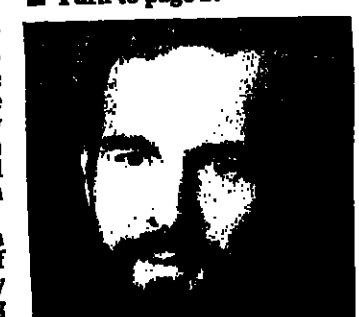
Conservative members of the European Parliament, who oppose the Bill, held a majority on the committee, but they were caught on the hop when an alliance of

Socialist MEPs voted that the public sector should take over the placing of temporary workers after a transitional period of tight legislative control over private employment agencies.

Neither Conservative nor Socialist MEPs expect the amendment to be passed when the European Commission directive and amendments are debated by the full European Parliament in April. But the vote has increased the intensity of the campaign in the UK against the directive.

The EC directive was issued in April last year largely as a result of trade union pressure, particularly in France and Germany. Among the proposals which could adversely affect the data processing contract industry were:

- Contract work limited to three months, renewable to a six-month maximum;
- Temporary staff to be paid the same as permanent staff;
- Turn to page 2.



PATTERSON... Pushing for amendments.

## CDC gets stake in Systime

by John Kavanagh  
US COMPUTING giant Control Data has become the biggest shareholder in the UK systems manufacturer Systime by buying about 35% for more than £10 million. The move cuts the government-owned British Technology Group's holding from 29.5% to under 20% — and opens up new overseas markets for Systime products. Control Data will be selling the UK firm's systems in the US and elsewhere.

Control Data's £10 million-plus represents new investment in Systime through the issue of extra shares. Systime managing director John Gow said the new money was needed to back the company's growth, running at 50% a year.

Revenue this year are expected to reach £66 million, compared with £44 million in 1982.

"This move gives us the finance we've always wanted to get on and do the job properly," Gow said.

Systime approached its existing shareholders for backing first but the British Technology Group has just been told by the government that it must cut its annual spending to £10 million. The other shareholders before the Control Data involvement were a group of pension funds, with 36.2%, and

## Govt decision soon on Alvey plans

INFORMATION Technology Minister Kenneth Baker last week announced in the Commons that the government would respond "shortly" to the Alvey Committee's £350 million plan to back information technology in the UK.

Baker added that the government had almost finished its consultations with interested groups. A Department of Industry spokesman declined to comment on rumours that the government would announce plans to implement all the major features of the report next month.

## Sinclair's million

SINCLAIR Research claims to be the first company to sell a million home computers just three years after launching the Sinclair ZX80. It has sold 130,000 ZX80s, 750,000 ZX81s and so far nearly 200,000 of the newer and bigger ZX Spectrums, as well as 600,000 computers made under licence by Timex for sale in North America.

## Transac control

CII-HONEYWELL Bull's holding company, Compagnie des Machines Bull, has taken majority control of Transac, the peripherals subsidiary of Alcatel Electronique which is part of the vast State-owned Compagnie Generale d'Electricite group.

## First choice

APPLICATIONS for university computer science degree courses are up 5.1% on last year, according to the Universities Central Council on Admissions. The latest figures released by UCCA show that 4,795 school-leavers and others made computing their first choice subject compared with 4,564 in 1982.

## Management sets up new company after VAT man knocks at door

by John Kavanagh  
VAT demands have put the Data General specialist software house Computerplan out of business. But a new company, Computerplan Software Services, has been formed by the management to take over the business and 10 staff.

The new company expects to be profitable on its first-year turnover of £750,000 — and hopes to pay off Computerplan's creditors after six months.

The new company has the backing of Data General: at the creditor's meeting tomorrow (Friday) the US minicomputer manufacturer will support the management's plans.

Computerplan has invested substantially in software development since its formation in 1977, said George Brown, managing director of Computerplan and majority shareholder. "But

the development costs overran the company. Computerplan Software Services was formed as a subsidiary in October to protect the users and jobs in anticipation of the parent being wound up.

"We had hoped to restructure the subsidiary's finances after six months, for example by bringing in an outside investor, and pay off Computerplan's creditors. But a substantial creditor — the Customs and Excise — was not prepared to wait."

Brown added that another creditor, the Inland Revenue, had been ready to wait.

Brown and five senior people are now working on the purchase of Computerplan Software Services from the parent. He said there were no bids from outside.

A Data General spokesman said the US firm was a "major creditor."



BROWN... "Development costs overran the company."

"We are supporting the plans for Computerplan Software Services because it will ensure continuation of service to Data General customers," he said.

## Burroughs into PCMs

From front page.  
and Hitachi, as far as is known, continues to supply IBM with laser printers despite the recent verdict against the company in California for stealing IBM secrets.

Late last year Mitsubishi did a deal with Sperry Univac for the supply of integrated circuits, large-scale integrated circuits and for some peripherals. The deal with Sperry appeared to end a long-established link between Sperry Univac and Old Electronic, which made and supplied Univac machines in Japan.

The coming deal between Burroughs and either Hitachi or Mitsubishi is also set to follow the pattern of old deals abandoned, new deals made, as is how things are going in Japan at the moment.

Mitsubishi has had no success to the RCA/Xerox/Sigma relationship, and has been casting about for some time for a successor.

Hitachi on the other hand has been very aggressive in the marketplace, with deals to supply BASF and Olivetti in Europe, and NAS in the US, with IBM compatible mainframes.

For this reason the Japanese feel certain that the major deal will be with Mitsubishi and Burroughs, with maybe some extended peripherals agreement with Hitachi.

Burroughs was reluctant to comment directly on any coming announcements, but the company accepted that Burroughs' visit was for the purpose of evaluating Japanese companies.

## LINE NOISE

UNDETERRED by peace pickets at a recent conference on the controversial defence language Ada, the government is about to announce £6 million support for the four companies of Ada Group. The money will be used by the consortium led by SPL International and flanked by ICL, Systems Designers and Software Sciences, to develop the Ada Program Support Environment, or APSE, which includes the compiler and operating system.

STORAGE TECHNOLOGY says it will make the first shipments of a central processor by the end of the year. Some commentators suggest the proof of the pudding will be in the eating. The STC CPU will be about the size of the expected new Olympia machine from IBM. STC is also promising shipments of its optical disc with four gigabyte platters by next year. And it also says that STC, not CDC or Memorex, will be the first to ship 3380s in production quantities. STC says it is signing provisional orders with customers on that basis.

LAMBART, the zero-to-£7 million in four years DBC systems specialist, is about to dip a toe into micro waters. The company admits to plans to push 3-400 micro into the UK market this year from an as yet head-brained but excitingly tight-lipped supplier for their about to be signed deal and will only say that the colour graphics should clean up — at least in the DBC market.

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Rapid Terminals

## Deal on for IBM and Matsushita

by Kevin Pearson  
IBM and Japanese electronics manufacturer Matsushita are to announce a joint venture to manufacture computers and ancillary equipment.

The two companies, in a formal statement, said they were holding "detailed discussions on a proposal to set up a joint venture company to make information processing equipment in Japan". No firm timescale has been put on the negotiations, but the intention is to reach a conclusion "as soon as possible", an IBM spokesman said.

Co-operation between Matsushita, the sixth largest electronics manufacturer in the world (known in the UK as National Panasonic) and IBM is believed to cover joint product development, as well as manufacturing. Matsushita has been working on office automation equipment with extensive graphics facilities.

The proposed joint venture would concentrate on the lower end of the information technology market, including terminals, office automation equipment and small business computers. It would ally

IBM's computer expertise with Matsushita's knowledge of mass production techniques.

This is the first time the companies have admitted a serious business relationship, despite rumours stretching back to 1981. It was speculated, prior to the launch of the IBM Personal Computer in the US in mid-1981, that Matsushita had been commissioned to design a microcomputer for IBM.

IBM denied this at the time, and the machine which emerged was designed by IBM staff. But rumours of a potential link-up between IBM and the Japanese electronics giant continued.

IBM already has a sizeable manufacturing operation in Japan, which is its second or third largest market outside the US. Until 1981 IBM was the largest supplier in the market, but it was then overtaken by Fujitsu, and is being chased hard by Hitachi, both of which make IBM-compatible machines.

The fourth major Japanese computer company is Nippon Electric (NEC), which once had design links with Honeywell.

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# SPL aims to counter Japanese

by Philip Hunter  
SPL International is forming a European group from leading industrial and research bodies to reply to Japan's grand plan to build a radically different type of computer by 1990. The group is cast in the spirit of the government's Alvey report on the Fifth Generation of computers, and is one of the first positive responses to it.

"We need government investment urgently," said SPL Fifth Generation project manager Bob Muller, in a reference to the £350 million that the Alvey report said should be made available for the kind of industry-based research common to Japan.

So far there have been two solid industry responses to Alvey. Imperial Software Technology was launched last autumn by Imperial College, National Westminster Bank, Pactel and Plessey to pool

university and industry research in the exploitation of new software techniques.

At the same time six companies including SPL, Pactel and Logica formed a group to concentrate on joint software development with an eye to Fifth Generation.

SPL last year staged the first Fifth Generation conference to be held outside Japan, and launched its own expert system Sage. Muller admitted that Sage is the kind of product the new group launched by SPL will discuss, but said there would be no conflict of interest.

SPL's new group, called Insight, will focus on two areas: knowledge-based systems and the link with the end user. There will be an advisory panel of eight, including expert systems guru Alex d'Agapeyeff and Bob Kowalski of Imperial College who is the world's most dedicated expert on



MULLER... Hoping for Alvey money for Fifth Generation research.

the logic programming language Prolog which the Japanese have chosen as a base for Fifth Generation software.

"There is also a feet-on-the-ground panel from the IT industry to help manage the group," said

Muller. Full membership of Insight is limited to 20 organisations and costs £7,000 for the first year. This includes a two-week world study tour of research centres in Japan and the US to be held in June.

## Call for Tory commitment to reform of copyright law

by John Riley  
THE effective outlawing of software piracy should go into the Tory manifesto for the General Election, says a Conservative computer group.

The Conservative Computer Forum, the Party's computer industry liaison group, unanimously agreed recently on what should be the two most vital government contributions to information technology for 1983. It wants comprehensive copyright reform legislation to protect computer and video software and electronic publishing, and it wants "pay as you view" from the outset on cable TV.

Charles Christian, a Forum committee member, commented: "We want a commitment to stop piracy. Our members from industry say they will have more confidence in building up software if there is protection. There was some provision in the Copyright Amendment Act last year, but it doesn't get to grips with modern technology - and the stiffest penalty remains at £50," he said.

"While we are not a formal policy-making part of the Party, a number of Ministers are members of the Forum".

## SALES BRIEF Scicon wins oilfield order from Burma

SCICON, the independent company formerly owned by the petroleum, has won a contract from Burmah Oil to implement an oilfield database system.

The first stage has already been completed for £30,000 and will include data on wells and platforms. Other sub-systems will provide data on the quality of crude oil.

## Philips rolls on

A PRODUCTION management system worth £75,000 is being installed at an East Anglian roller bearing by Philips Business Systems. The system will handle accounting, factory scheduling and export documentation of the bearings, which are used in systems such as radio telescopes and nuclear remote control equipment.

## Seaside system

BRIGHTON Borough Council has given a £56,000 contract to Barefile Management Services to place an old ICL computer with a new IBM model. The new system will automate billing of ratepayers, and the council says that about four jobs will be lost as a result.

## Camber kits out

KNITTING machine maker Camber International of Leicester has placed a £438,000 order with Stonefield for a microprocessor-based system to control the "stripping" mechanisms on Camber's machines. The processor will be specially adapted to meet Camber's needs from Stonefield's general purpose Mini-Micro control system.

## University update

UNIVERSITY of London Computer Centre (ULCC) has updated its data communications network with £70,000 worth of high speed modems from Thorn EMI. The modems will give the centre access to a planned network to link all UK universities which have access to ULCC's powerful facilities.

## African exchange

PLESSEY Controls will install a £500,000 telephone exchange in the African country of Lesotho after winning an international tender.

## ME29s in cement

ICL has taken a £2 million order for 12 ME29 systems with 20 DRS 20 terminals from Blue Circle Cement. A national network with links to existing IBM mainframes will be formed to speed up order processing.

## GLC choice

A £633,000 contract to supply the Greater London Council with an office automation system has been won by Xionics. The Xibus system will be supplied by Master Systems of Camberley to County Hall with 80 workstations. The contract was won against competition from IBM.

## Minis for NERC

THE Natural Environment Research Council has bought two GEC 4000 series 32-bit minis, one for its Institute of Hydrology in Wallingford, the other for its head office in Swindon, after evaluating machines from 21 suppliers.

## 700,000 an hour

NATIONAL GIRO has ordered its sixth £300,000 Trace 1 optical character reader from Recognition Equipment of Slough. It now has a throughput capacity of over 700,000 documents an hour and is believed to be the largest OCR user in the UK.



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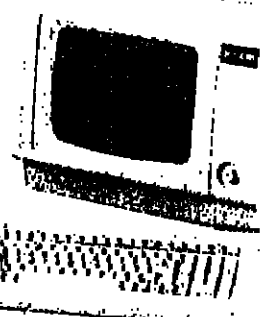
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## Gould fills out its supermini range

by Robert Parry  
SUPERMINI maker Gould SEL has filled out its range of 32-bit machines in its continuing quest for price/performance leadership in the supermini market.

The 32/67 machines plug the gap between its existing 32/27 and 32/87 models, using the cheaper semiconductor technology of the low range 32/27 to implement the high speed architecture of the 32/87.

"There are no minicomputers faster or more cost-effective than ours," claims Gould's UK Southern region manager David Moody. "We already have the world's fastest supermini in the 32/87, now we've got the second fastest too."

Gould's performance figures for the new machines put them between two million Whetstone instructions per second for the low end single processor 32/6705 and 3.2 million for the dual processor 32/6780. The starting price is around £100,000, which gives the basic processor with one Mbyte of main memory, 80 Mbyte Winchester and a tape drive.

As with the top line Concept 32 machines, the 32/67 CPU uses a

four-stage pipeline, overlapping fetch, decode, execute and put-away phases of successive instructions. It has a dual cache memory, with 16 Kbytes each for data and instructions.

Two of these units, which use 2901 bit-slices giving a cycle time of 150 nanoseconds rather than the 32/87's BCL componentry, can be linked through the Selbus system bus. This gives an 80% improvement in throughput, says Moody. This combination of speed and price, allied to the continuing software compatibility through Gould's MPX-32 operating system and its Unix implementation, will open up new market areas for Gould and strengthen its position in scientific/technical real time applications.

More than 50% of UK business is still in simulation, particularly for commercial and military aircraft, says new business manager Chris Wilkes, but he sees significant markets coming for Gould in universities and medical electronics, as well as commercial processing.

"We intend to play a very active role in university Unix environments," adds Wilkes.



ROBINSON... No invasion?

## 'Privacy may not be threatened'

IT is not clear that the use of the computer must result in an invasion of people's privacy, Winston Churchill feared that the discovery of X-ray photography would spell an end to all human privacy because it could see through walls and clothing, yet nobody would today regard the X-ray as a threat to privacy.

This message will be part of the British Computer Society's Silver Jubilee lecture to be delivered next week by Dr Louis Robinson, IBM director of university relations. The BCS Silver Jubilee is sponsored by Computer Weekly.

Robinson will also discuss machine complexity in his paper entitled "The Challenge of Future Directions in Information Processing". He will argue that certain inherent complexities in information processing cannot be wished away.

Information processing will always be complex, according to Robinson, but its complexity can be handled by the system or the user. Until now, Robinson contends, a great portion of that complexity was handled by the user.

"But personalised computing demands have created a market demand that a great deal of that complexity be absorbed by the computing system itself, thus making access to the computer system easier for the user."

## IBM will push PC harder, says report

by George Black  
A MORE aggressive strategy by IBM to promote its Personal Computer is forecast in a new report this week. And it could announce an IBM-PC.

The research director for publishers Strategic Incorporated, Allen Jeffery, says IBM was taken by surprise by the PC's runaway success and up to now has been worried about its possible effects on other IBM products.

But the giant will be pushing much harder from now on, Jeffery thinks. A high-end model to compete with Apple's Lisa could be on the drawing boards. And there could also be a low-end portable to break into the hobbyist market.

The Lisa challenger would also be Intel-chip based and its software would be compatible with

that of the present PCs. A Unix-type operating system will probably be introduced on both, it is predicted. To boost its market share, IBM will be taking advantage of its size and strength with aggressive pricing and discount policies.

The PCs could be enhanced with high-resolution colour graphics, light pens and a Lisa-style "mouse". The minimum production level by IBM in 1983 is likely to be a million to a million and a half. By 1985, with the aid of a low-end model, IBM could have captured as much as half of the market, the report says.

"IBM's Personal Computer Strategy - The New Round," by Strategic Incorporated, available from International Publishing Inc., 14 Roland Park Avenue, London W11 4UR, price £1.50.

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'Each person in France figures in about 500 files'

# French struggle to guard privacy

by Jack Gee

THE FRENCH Commission for Citizens' Protection Against Data Processing says in its annual report that the fast growth of databanks is making it increasingly difficult to ensure that the law on computer files is respected.

The law, passed in 1978, set up the Commission which is composed of parliamentarians and government nominees with a watchdog role of ensuring that citizens have access to databanks in which their names figure. Police files are excluded from these provisions.

Senator Jacques Thyraud, a Conservative politician who heads the Commission, said: "Every citizen can obtain access to a file if he has doubts about the legality of the information it contains about him. But our Commission receives only a dozen complaints of

this type each month on average."

France's data privacy law bans references in files to individuals' religion, politics, race or health. However, the deterrent role of the Commission seems to be confirmed by the fact that so far complaints from citizens have all been satisfied without intervention by the courts.

The law requires all databased lists of names to be registered with the data processing commission. Only 30,000 were registered by the deadline at the end of 1981. Since then 100,000 others have been added, indicating increased respect for the law as well as the creation of new databanks.

Senator Thyraud says in the Commission's third annual report: "Each person in France figures in about 500 files."

The Commission has intervened

successfully in recent months to protect citizens' rights against the State. It has ensured that the file of people liable to pay the newly created wealth tax on fortunes over £300,000 is not extended to those who might later enter this bracket.

It has also imposed restrictions on the government's new file aimed at combatting terrorists, limiting this to about 20,000 people instead of the original target of over two million set by the police.

Commenting on the difficulties faced in protecting the citizen from databanks, the report says: "It will become more and more difficult for the individual to get lost in the crowd. Like a pinball he will keep bouncing against new barriers which will trigger signals. Our job is to make sure that the data tracks do not meet."



Computers help police keep tabs on a wide range of problems.

## Computer gives police the 'tip-off'

LANCASHIRE police handling some 100 burglar alarm calls a day of which 97% are false have taught a computer to sift them. The program will "tip them off" which ones are likely, from previous experience, to be false. The software

is based on a chain of micros from MDS Computer Systems (UK). MDS - known in the US as Mohawk Data Sciences - has recently won another contract to supply Lancashire police with five more micros, bringing their total

to 10. The Series-21 distributed processing system is being installed at the headquarters in Fleetwood and at offices in Lancaster, Blackpool, Accrington and Preston. Value of the whole deal about £81,500.

## Third party vendors get own conference

BUYING in hardware and software products then selling to the end user is the subject of a conference being organised by *Computer Weekly* in April.

The conference is for so-called third party vendors - the systems houses, OEMs, software houses, distributors, dealers and retailers which buy in from a manufacturer or supplier and market to the end user. It will cover the ways to sell, the level of post-sales support to offer, the right product to choose for the right market, and the use of advertising and direct mail.

Called the Computer Trade Conference, the event runs alongside *Computer Weekly's* recently announced Computer Trade Show at the Wembley exhibition and conference centre. Dates are April 26-27 for the conference, and April 26-28 for the show.

Both conference and exhibition are the result of collaboration by *Computer Weekly* and sister journals *Systems International*, *Practical Computing* and *Software*.

One of the highlights of the pro-

gramme is sure to be in-depth looks at how the majors - in this case IBM, ICL and DEC - are operating their own authorised dealer schemes.

Finally, the conference will feature presentations as well as vendors, with presentations on how to go about selling through a major computer company, RAI contract under which ICL make and sell its Black Box, Comgent Technology's deal with the roughs and Peachtree's breakthrough in IBM Personal Computer packages are all successful examples which can be copied.

Full details of the programme are shown in the advertisement on page 19.

■ To reserve a place or get details of exhibiting or visiting the Computer Trade Show simply clip the coupon in the advertisement or contact the organisers at The Computer Trade Show and Conference, Surrey House, Throby Way, Sutton, Surrey SM1 4QQ. Tel: 01-643 8040.

## Market for DBMS to hit \$1.7 bn

by George Black

THE world market for database management systems will grow to \$1.75 billion by 1987, says an American report.

Five vendors account for more than two-thirds of the traditional market at present - IBM is much the biggest, with Cullinane and Chilton vying for second place, followed by Intel and Software AG. The smaller market for non-procedural DBMS-based languages is being dominated by Mathematica Products Group with a 22% share, the report says.

Runners-up at present are Infodata Builders with 18% and Infodata Systems with 12%. Traditional DBMS packages for mainframe use will decline to two-thirds of the market in the next five years, it is forecast.

Programs for desk-top machines will have taken more than a tenth of the cake by then. Annual compounded growth of 31% is forecast for independent companies writing DBMS packages.

The DBMS Marketplace, International Data Corporation's Software and Services Division, 1100 Avenue of the Americas, New York, NY 10020.

## CDC gives micros to colleges

by Howard Kanten

CONTROL DATA last week announced a \$6 million giveaway of Model 110 eight-bit microcomputers and some Plato software.

The company will give one of the micros and some of its Plato maths and science course materials to each of 110 colleges which will be required to submit to CDC a plan for integrating the Plato technology into their curricula. The colleges will also be required to develop plans to transfer the technology to secondary schools and community groups by October 1983.

CDC has a strong reputation as "a company with a social conscience", and CDC president William Norris has long been interested in applying technology for the betterment of various groups.

CDC has spent more than \$1 billion over the past 20 years developing Plato, which is an extensive set of computer-assisted instruction materials.

## NEWS ANALYSIS

# Govt seeks right way to regulate telecomms

Donald Kennett reports on the efforts to liberalise telecommunications

THE GOVERNMENT is making great play of its careful consideration of the moves towards an open market in telecommunications.

Earlier this month it published the findings of an independent report on how to regulate the activities of British Telecom when it becomes a private company with a dominant presence in its market.

The report, by Professor Stephen Littlechild of Birmingham University, reaches similar conclusions to the report two years ago by Professor Michael Beesley of the London Business School. Beesley was asked to study to what extent companies' rights to sell services based on circuits leased from BT should be limited in the interests of the consumer and of BT's continued viability.

He concluded that it was in the consumer's interest to allow complete freedom while the detriment to BT from this would be small. If the principle were carried progressively into international circuits, BT too would gain.

Beesley went outside his remit to recommend competition in transmission and switching as well. This would make it easier to regulate BT's activities in the interests of consumers, he said, as well as providing a choice of price and quality packages.

In presenting his arguments Beesley made several references to a book called *Elements of Telecommunications Economics* written in 1979 by Littlechild.

'It's a bit like wrestling with an octopus. But if there were no such things as British standards, it would be a charter for importers.'

Littlechild's task in his recent report was to determine the best means of regulating BT. Beesley had said this would be easier to do in the presence of some competition. Littlechild said that providing more competition was by far the most effective way of doing it. He also had to consider how to maximise the proceeds from the sale of BT shares, encourage efficient and innovative telecommunications systems and satisfy all reasonable demands for services.

He concluded that the best way to do all these was to create more competition. This should be done by allowing resale of private circuit capacity, telephony on cable television networks, more radio networks when the spectrum became available, more terrestrial and satellite networks if they used different techniques from BT and its rival private network Mercury, and by allowing Mercury to have switched international connections.

But this competition would not protect the consumer from exploitation while BT still had a dominant market position. So in the short term Littlechild recommended that the prices for the services that most affected small business and residential users be pegged below inflation for at least five years.

The government rejected the idea of allowing telephony on cable television networks, except where BT or Mercury were involved, and decided that BT and Mercury would still be the only organisations to provide links between cable networks.

International connections are to

be the subject of an announcement by the end of April, and resale will go ahead on terms and timescales to be discussed with BT and other operators.

When the Beesley report was presented, BT and its staff unions were horror-struck at the prospect of network capacity being resold by customers with private networks. It was felt that such a move would undermine BT's ability to fund the modernisation of its plant.

Two years later BT merely says resale will create pressure for accelerated tariff rebalancing - the raising or sustaining of local call prices while the long distance call charges which have been subsidising them fall.

Union and political reaction to the government's plans has now become a diffuse opposition to the whole range of denationalisation and deregulation activities which affect a number of industries and which can only be resisted effectively by changing the government at the next election.

Paradoxically industrial action would be likely to weaken the protesters' position by accentuating the desirability of alternative sources of supply. Once alternative sources were set up, action against the dominant supplier would stimulate demand for them as nothing else could.

Information Technology Minister Kenneth Baker has called the licensing of Mercury one of the most important decisions this government has made. Even before starting up, he says, it has prompted BT to cut its long distance call charges and to improve the efficiency of its operation.

The Telecommunications Bill now going through Parliament is intended to free BT from government constraints on how it raises funds for investment and how it makes its policy decisions. The reasoning is that governments, with competing demands on their budgets, may easily underestimate the amount of investment needed in an important area like telecommunications and will find it hard to make a large investment which will have a payback period longer than the election cycle.

It is also argued that rapid progress cannot be made without taking risks and that risk investment on a significant scale is inappropriate to a government-backed organisation.

To prepare for operation on a commercial basis, BT has reorganised itself into about 90 profit centres, 60 of which are sales areas and the rest more specialised services such as Prestel, the Packet Switch Stream data network, telex and facsimile transmission. This will force each part of the business to operate as a revenue generating unit, offsetting costs against charges instead of as a monolith providing a range of interdependent services.

In the long run these may become separate companies each raising their own capital and making their own investments. It is already in prospect that the areas will do their own local purchasing and may charge different prices from each other for similar products or services.

Meanwhile Littlechild has proposed more competition from new suppliers outside BT, but the government is holding back from going all the way. It is unclear whether it has doubts about the safety of going to completely open competition in all areas, is respecting the wishes of its opponents to avoid rushing headlong into complete change, is keeping everyone guessing so as to weaken the oppo-

sition, or is introducing change at a rate that allows each step to be understood before going on to the next.

Baker, for example, has been criticised for failing to publish the licence that will be issued to BT while the Bill under which it will be issued is at the appropriate stage in committee. Baker replies that the document he has published as "the government's views on the licence" is in fact the licence in plain language. Waiting until it is put into legal language will, he claims, only make it more difficult to understand.

He has also been accused of setting up prohibitively expensive procedures for approving equipment to be attached to the network. His colleague John Butcher answered that by saying that the Department of Industry was get-

ting quotes from approval agencies in West Germany, Canada and the US on their test fees. "I have yet to be convinced we are out of kilter," he added.

Complaints, he said, had mostly come from very small importers. Standards for testing against were taking a while to implement because it was necessary to obtain consensus in the committees discussing them. "It's a bit like wrestling with an octopus," Butcher said. "But if there were no such things as British standards, it would be a charter for importers."

There had been 32 approvals given so far under the new procedures, Baker said, including 11 for devices made in the UK, six for devices assembled here and six for devices being modified here.

Turn to page 10.



Will British Telecom retain its dominance?

# LOCAL

adj. belonging to a specified place

# AREA

n. defined space for particular use

# NETWORK

n. a chain of interconnected people or operations

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For queries regarding content/administration, contact Nigel Tout or Trish Wright at ICL Forum, Bridge House, Reading, Berks RH1 8PN. Tel: 0734-581258.



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# Beware micros, says FT report

MOVING MICROS into offices might be all the rage, but it is costing companies dear. Keith Bedell-Pearce, author of the *Financial Times* management report on computers and information technology, warns that widespread introduction of personal computing in many businesses is costly and inefficient, and that the hidden costs of programming bump up the price of "cheap" personal computing to unacceptable levels. "Senior management are being asked to make substantial financial commitments on microcomputer purchases," says Bedell-Pearce. "Even worse, they are sometimes not even asked at all, with the micros being managerial impulse buys out of petty cash. Many large organisations have no clear idea of the number of individual computing facilities they have under their wing."

Users without computer exper-

ience or proper training often adopt an undisciplined approach to computing, he continues, which compounds the problems. Security and limitations of professional DP departments, and getting things arranged so that you can harness their enthusiasm," says Bedell-Pearce.

He sees the DP departments starting to offer the management seeking access to personal computing: a choice: take the packages on a mainframe, with the advantages of access to corporate databases and all the housekeeping and maintenance taken care of but without much user friendliness; or go it alone with a recommended microcomputer, taking care of the housekeeping and putting up with restricted data capacity and limited communications with other users.

"There are cases when it is clearly better to go with a stand-alone microcomputer," he adds, "but there is still a need to fix on a common system."

The report aims to offer a layman's guide to all aspects of computing, and is an updated edition of the report first published in 1979. The new sections cover the areas of office automation, personal computing, word processing, local area networks and informa-

tion technology in general. There is also a contractual briefing, where Bedell-Pearce covers what users should seek in computer contracts. \*Computers & Information Technology: The Essentials, Financial Times Business Information Ltd, Bracken House, 10 Cannon Street, London EC4P 4BY. Tel: 01-248 8000. 255.



BEDELL-PEARCE . . . Micros may be costly and inefficient.

"There is a narrow line to be walked between cramping the style of the personal computing people, imposing what they consider the undue restrictions of professional DP departments, and getting things arranged so that you can harness their enthusiasm," says Bedell-Pearce.

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## Televideo's new-look terminal for Europe

TELEVIDEO Systems is to re-look top-line video terminal. The 970 breaks away from previous Televideo models in physical design, having a vertical housing for the electronics on one side of the terminal. Air for cooling can be easily past the logic board to power supply, and does not need a fan.

The CRT screen can display 132 characters to the line, with choice of two character sets at any time. There are eight differences in the terminal firmware, and two of these can be loaded for immediate access. The keyboard is completely soft, allowing the user to define special character sets if wished.

The basic terminal comes with a Z80A processor and 64K of memory, containing all the communications links, screen sizes, character sets and so on from the keyboard. The terminal will emulate those from other makers.

## Five micro firms' adverts in trouble

IT has been a bumper month for advertising troubles among micro companies. Complaints lodged in December against five of them were upheld by the Advertising Standards Authority, with Dragon, Rank Xerox and Olivetti joining the hardy perennials Acorn and Sinclair.

The complaints against Sinclair both covered ZX81 adverts. One concerned the availability of software for the machine; the advert

showed three software packages that needed the 16K RAM extension, but neglected to point this out, leaving the advert open to misinterpretation.

The other centred around the advertising line "All you need to run the programs . . . is a portable cassette recorder." Several popular with the ZX81, and the ASA says that Sinclair should make it clear in the adverts that this is the case.

Micro News is compiled by Robert Parry

SOFTWARE FILE

Tool factory computerises for survival

by George Black

A TYNESIDE machine tool factory with £200,000 to invest in modernisation has opted for a computerised management system.

The main problem for Stewart-Warner, makers of Tior pneumatic pavement breakers and Alemit pumps, was one of too many parts. Manufacturing director John Holmes admitted that a firm with a £5 million annual turnover struggling to make a profit should not have some 13,000 parts to keep track of. But there was not enough money available to carry out the radical redesign of the whole operation which would have been the ideal solution.

Most of their machines are ten to 15 years old, some even pre-war. To replace the lot was out of the question. Once Britain's largest undertaking of its kind, under the name of Armstrong Whitworth, which employed about 70,000 workers, it was bought by an American concern and has in recent years been hard hit by the recession. The payroll is now a mere 200, and the factory is running at well below capacity.

Instead of the drastic move to complete automation, they turned to a new software answer provided by Burroughs, briefly called The Manufacturing System - TMS. Burroughs is trumpeting it as the first of its kind, welding together all a company's dealings from supply of components through

to distribution of products.

The idea is in its infancy: the B1900 mini is still far from taking over all Stewart-Warner's paper-passing tasks. But after the first year of running the system Holmes claims 30% improvement in productivity - a £500,000 saving, with a 20% reduction in inventory. Management services manager Norman Massey commented, "The bureau service we used was okay for some jobs, such as costings, but was no good for general planning." The software amounts to about half a million lines of Cobol code, covering accounts, payroll, maintenance and asset register, material requirements planning and a range of production aids.

Tynemouth MP Neville Trotter put the situation into a starkly realistic perspective: "Developments in Korea and Taiwan frighten the Japanese as much as they frighten us. One Korean factory has all 13,000 workers doing 25 hours a week overtime each - at very low rates of pay. With that kind of commitment you don't need subsidies. They get by without any welfare state and are thus able to put a quarter of their national income into new plant. All of this is extremely difficult for us to face. I've been 20 years in public life and in that time there have never been enough jobs here in the North-east. The use of high technology is the only way we can protect our standard of living."



McGLADDERY . . . We will stick with DEC.

## Filetab stays with DEC

SPECIALIST software house Filetab Support is to stick to working on DEC hardware.

Ritchie McGladdery, Filetab managing director, said: "We are often asked if we are going to shift to other hardware and have been approached. But I think the answer has to be that we will stick with DEC for the foreseeable future."

McGladdery was speaking at the launch of Filetab's latest software tool, RIL (Rapid Interrogation Language), an online interrogation system which runs on the DEC range from the professional micro to large Vax systems.

Filetab claims the system is designed to be used by novices and

non-computer professionals and that half of its 300 current users have expressed an interest in RIL. The interrogation system provides a method of "browsing" through files and selecting and processing individual pieces of data online.

McGladdery said: "It is basically a way for computer departments to get the users off their backs. With a terminal the users can check up on things like outstanding invoices from Yorkshire DP installation. And the users get the benefit of having information when and where they want it."

RIL is a read-only system with extensive security features including a full password system.

## MOS circuits joint company

TELEFUNKEN and Diehl group are to concentrate activities in developing, producing and marketing custom MOS circuits in a jointly formed company, Eurosil Electronics.

Burosil Electronics will take over the present activities of Diehl's Burosil subsidiary, formed in 1972 to supply ICs to the watch and clock industry, and for instruments and telecommunications. Diehl will have a minority interest in Burosil Electronics.

## PPL into micro software

PREVIOUSLY associated with mainframe and mini financial software packages, Package Program Ltd aims to move into micro software this year.

The intention was announced last week by managing director Roy Taylor. "The idea is to make whole range of 16-bit micro usable as intelligent terminals," he said. PPL will adapt some of its own software to meet the changing market, as well as buying in a number of packages from small British software houses.

## System to predict staff needs

by George Black

A MANPOWER modelling system which mirrors the highly successful financial modellers has been developed by the Institute of Manpower Studies.

The package, called Prospect 2, is a computer model for predicting personnel needs. The specification was worked out by a team from the IMS, Shell, the Wellcome Foundation, BP, the Department of Health and Social Security and the Trustee Savings Bank. The program was written for the IMS by Bernard Weyman, formerly database researcher in the Department of Computer Science at London University's Birkbeck College.

The system is now available in three mainframe versions and on I. P. Sharp Associates' Canada-based time-sharing network. Trials are now taking place on a scaled-down, micro version, which it is hoped will be available by May. The micro project is being carried out by Des Watson, a researcher in Sussex University's computer science department.

"We considered various ways of going about the idea and decided that to write it in APL would be quickest," said the IMS deputy director Malcolm Bennison. "Prospect 2 is designed to enable you to say what staff you are likely to need at various levels if a certain set of options is followed."

To date personnel planning systems have usually been developed in-house at relatively high cost. I. P. Sharp and the IMS are hoping to prove that an off-the-shelf package or a bureau service can offer a cheaper and more satisfactory alternative.

## US database system aims at UK public sector sales

A MAJOR US database management system which has made a big impression with private British companies could be about to break through into the public sector.

The system is Focus, which was developed by Information Builders of New York during the mid-Seventies. Since 1976 it has been offered in this country on a bureau basis by Tynmashare. In 1981 Tynmashare's sales director Peter Scawen left to become managing director of IBI's offshoot Information Builders (UK), which has been selling Focus as a package.

Now the system has been adopted by London bureau SIA, which is owned by the French government's CISI bureau. Scawen said that SIA would be a valuable new outlet for the system, since SIA has been strong in the public sector over the past decade.

SIA has traditionally been linked to Control Data machinery, but has recently shifted its policy towards IBM. This month Focus is being launched on SIA's new IBM 3032 mainframe, running under TSO/MVS.

Tynmashare's version runs under TSO/MVS, so there will be no head-on clash. With 500 users worldwide, Focus is, like its rivals Mathematica's Ramis and CSS Nomad, built on to IBM equipment. Scawen sees this as an obstacle to his aim at getting Focus into the government sector. "Two things will work in our favour," he said. "One is the opening up of procurement policy, which will let in foreign multi-nationals' computers to government departments. The other is ICL's introduction of IBM-compatible mainframes."

# 32-Bit UNIX ? A unique opportunity

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مكتبة مركز الحاسوب



## Televideo to offer 15% of stock for a record £112m

THOSE who thought Clive Sinclair's overnight conversion to a value of £135 million was spectacular, should prepare themselves for what Philip Hwang of Televideo hopes to achieve soon.

US brokers L. F. Rothschild, Unterberg Towbin, in association with Robertson Coleman and Stephens and Shearson American Express, are planning to offer just 15% of the Televideo stock for a record £112.5 million.

After the offering Hwang will still own 68% of Televideo, and that will be worth about \$450 million.

The company is only six years old having been founded in 1977 and it had sales of under \$1 million in that year.

By 1980 turnover had shot up to \$12.6 million as Hwang expanded his product lines and consolidated the business, but the spectacular growth came between 1981 and 1982, when turnover tripled and Televideo ended 1982 with sales of \$98 million.

Profits have grown alongside revenues to reach \$12.7 million in 1982.

Televideo is best known as a terminal manufacturer and supplier, but has recently been building and supplying a range of 8-bit and 16-bit small business systems.

From the offer document produced for the share placing it is clear that the amplification of the



HWANG... To join the instant millionaires club.

Televideo lines with the small business systems is what has given the company its sudden access to a 200% growth path.

Between 1979 and 1982 Televideo shipped over 200,000 terminals and Hwang reckons the company is now the leading supplier of terminals to the non-IBM marketplace.

According to Hwang the company has now shipped a total of 20,000 micros, and the pace of shipment is rising dramatically.

It took 18 months to ship 20,000 micros, but in December alone the company shipped 10,000 terminals

and 3,000 micros.

Hwang says that in 1983 revenues from the micro sales will exceed revenues from the sale of terminals.

And Televideo has benefited from Hwang's Korean background. According to the prospectus Televideo's success arises from simple, easy-to-service designs, with most of the production carried out in Korea.

The prospectus carries no forecasts, but analysts in New York expect Televideo to maintain growth it has already achieved, maybe even better it.

## Dragon fires up for bigger profits

A FORECAST turnover this year of £35 to £45 million will make Glamorgan-based Dragon Data one of the largest microcomputer companies in the UK to date.

The forecast is based on current production of over 4,000 eight-bit Dragon micros each week, and demand which Dragon managing director Tony Clarke describes as "insatiable". Sales for Dragon - part of which was sold off by parent Mettoy last year - were £3 million to the end of December 1982.

The company has not released official figures yet, but Clarke suggests that profit for last year will be between £200,000 and £300,000. He believes that profits of between £3 and £4 million are possible for the coming year.

Growth at this speed would place Dragon in the forefront of successful British micro companies and would even outpace the record set by the Osborne 1 of going from zero to \$70 million worth of sales in 14 months. Only Apple in its early days equalled this kind of running. But the success of Dragon is likely to add further fuel to ill-feelings in the City over Mettoy's sale of the company.

Mettoy, which had turnover of £25 million last year mostly in toys, had losses of £2.7 million in

1981 and admitted losses for 1982 of £3.6 million.

Last December Mettoy sold 81% of Dragon for just £900,000, although the company retained the right to buy back 17% of Dragon at the price it sold the shares.

The row over the sale centred on the fact that a number of City financial institutions felt that Mettoy sold out too cheaply - and at the wrong time. However Chris Radmore, the broker handling Mettoy's affairs at stockbrokers L. Messel and Co, said that there was no way Mettoy could afford to provide the money for the Dragon development. Messel is currently handling a cash-raising exercise by

Mettoy, aimed at securing funds of £3.7 million for the Radmore said that so far the stock with no problem placing. Clarke says that Dragon is Mettoy's best asset and that it is a surprising Messel has had no problem finding takers.

A rough calculation based on probable profit at Dragon of £1 million would make 33% of £3 million worth about £10 or £11 million, on a conventional basis a valuation of the company at eight times annual earnings.

In practice valuations have been very much higher than this in some cases.



Dragon is set on course for dramatic growth.

## US analysts recommend Comserv

IN LINE with forecasts by Comserv president Ted Priem of turnover this year of \$40 to \$50 million, American analysts are recommending the company's shares to their clients.

Priem made his prediction when he was in the UK recently to launch the Comserv MRP11 Manufacturing Resource Planning software and to announce a series of large orders for the product.

The new orders are for the complete Comserv Advanced Accounting and Production System which will be installed at German chemical giant Hoechst.

So far Comserv Europe has sold over \$3 million worth, more than the entire company sold in its first three years in the US, according to Stewart McIntosh, Comserv European vice-president of sales.

In 1981 Comserv had a total turnover of \$17.6 million and for 1982 that figure is expected to be \$24 to \$25 million.

The analysts at US stockbrokers Shearson American Express forecast that that figure will rise to

\$41 million for 1983 and to \$51 million by 1986.

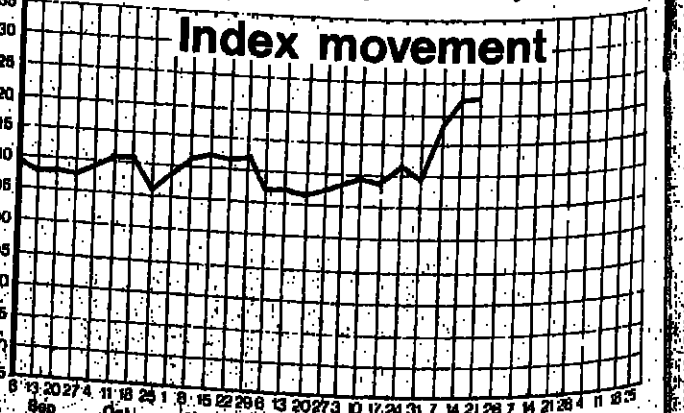
While growth at Comserv is outperforming the software industry norm of 19% over the past years, profits trailed slightly in 1981.

### SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

1983				1982				1981				1980			
Price	High	Low	Stock	Price	High	Low	Stock	Price	High	Low	Stock	Price	High	Low	Stock
280	285	275	ACT (Am Comp) (10p)	185	190	180	180	45	45	45	45	45	45	45	45
170	175	165	B. & W. (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Comserv (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Dragon Data (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Mettoy (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Televideo (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Unicom (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Unicom (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Unicom (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Unicom (10p)	120	125	115	115	30	30	30	30	30	30	30	30
170	175	165	Unicom (10p)	120	125	115	115	30	30	30	30	30	30	30	30

The table shows the closing prices on Thursday. The Share Index is based on the price of 100 companies in the table. Highs and Lows have been adjusted where necessary.



Company News is compiled by Kevin Cahill

## Canadian giant's \$285m for R&D

CANADIAN giant Northern Telecom is planning to up both R&D spending and capital investment this year, says chairman Walter F. Light.

He told a group of industry analysts in Boston that NT would spend \$285 million on R&D in 1983, an 18% advance on 1982, and close to 9% of corporate revenues - a slightly lower figure than that spent by many US corporations. (NT's spending less than half of NT's spending 15% of turnover on R&D).

Much of the R&D spend is intended to enhance the company's DMS and SL digital switching

systems and to improve NT's newly announced open protocol-enhanced network products.

The increased capital spending will give NT \$77,000 sq. ft. of new labs in Ottawa and a 50% increase in the size of the PBX at Santa Clara, California to 240,000 sq. ft.

Light told the analysts that NT expected only modest revenue growth in 1983.

Despite the cautious words, however, Light still expects 1983 to show the best year-to-year growth NT has had.

With a 45% increase in profits to \$437 million from the telecommu-

nications end of the business, Light still had to admit that NT had lost \$100 million on the Electronic Office Systems business.

Non-telecommunications products account for about 11% of NT's business and the company has been trying to diversify into general purpose office data processing for some time, so far at some cost and with no profits to show for it.

Light expects the integrated office systems operations to make a solid contribution in 1983, despite last year's poor performance. NT had total sales for 1983 of \$3 billion.

## Govt seeks way to regulate telecomms

From page 7.

Another 17 were being prepared for testing. Most of the devices are telephones, but seven of them have built-in modems and one of the devices is an autodialler.

Baker believes that competition in networking will come at a much faster rate to the UK than it has done to the US. By 1990 he believes 10% of telecommunications traffic will be carried by BT's competitors, whereas in 1979, 10 years after competition was introduced in the US, only 4% of the traffic was being carried by AT&T's competitors. This is accelerating now and the UK will be hard pressed to catch up, but Baker likes to look on the bright side.

On the equipment supply side it will be much faster, as demonstrated by three independent suppliers of telephones who have cut heavily into the market since it was opened to them last September.

One of the causes of Baker's optimism is the belief that the UK can learn from the US experience of regulating the market.

Littlechild says that despite having ample powers to extract and analyse information and considerable discretion in approving tariff structures and rates of return, regulators of various US markets

have succeeded in increasing monopoly power rather than reducing it. Annual hearings have been ineffective and time-consuming. There has been a trend towards pegging price increases to some form of index of inflation, and there has been increasing pressure to relax or abandon regulation.

The results that would be required of any scheme of regulation of the UK telecommunications market would be to protect consumers and small businesses from exploitation by a dominant BT, to encourage efficiency and innovation, to maximise the proceeds of selling shares in BT and ensure that it has good prospects after the sale, to promote competition, and to make the burden of exercising the regulation as light as possible.

The government had been considering several schemes of regulation and Littlechild was invited to make one of their workable. Instead he found that almost any scheme for controlling BT's prices or profits would share the disadvantages of the US methods. They would increase the risks of investment and discourage efficiency and innovation.

None would be as effective in straitening the above results as having no explicit constraints - except in the case of protecting con-

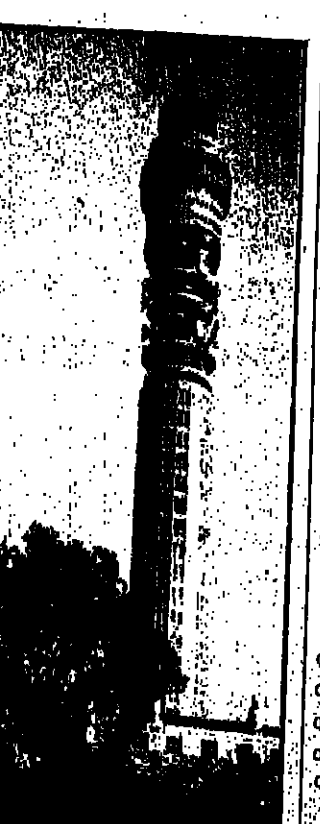
sumers. This would best be done in the long term by having effective competition and before this took effect by keeping critical price rises below inflation.

The methods reviewed included an output-related levy on BT's profits, designed to reward growth by reducing the levy in proportion, a maximum rate of return scheme, under which the Director General of Telecommunications could reduce BT's tariffs on local, trunk or international services if it made too much profit on any of them; and a profit ceiling scheme, which would trigger an investigation of prices by the Director General.

Adopting Littlechild's proposals will mean that the licence being prepared for BT will have to be altered and amendments will have to be made to the Telecommunications Bill.

The Bill has already spent 110 hours in the committee stage between its second and third readings in Parliament, as a result of which the government moved and won a guillotine motion last week which will limit the rest of the discussion to another 65 hours.

The total of 175 hours for this Bill compares with a total of 40 hours spent discussing the British Telecommunications Act, which ended BT's monopoly in 1981.



## The biggest software innovation since database

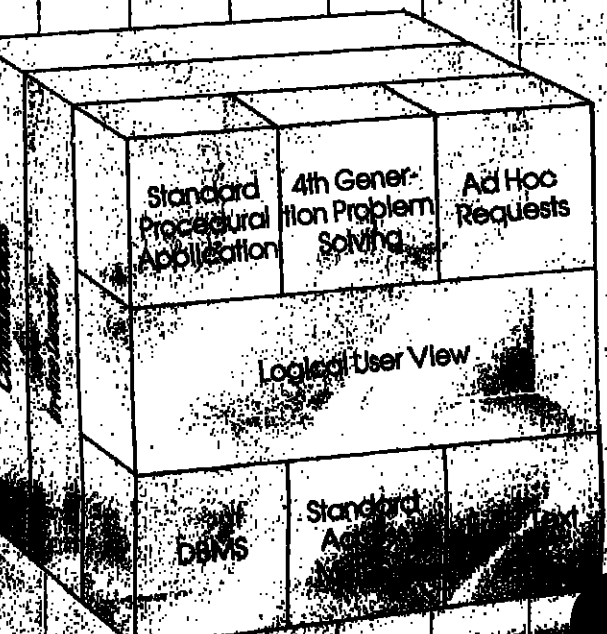
TIS is a unique product developed by Cincom Systems to meet the needs of large scale IBM users demanding the complete solution to information processing.

Conceived and built to meet the specific requirements of both the professional programmer and end user - TIS is 4th generation data base technology combining relational view and relational structures with high performance.

TIS is an entirely new concept - an entirely new architecture, completely apart from any previous information handling system.

One of the major innovations which sets TIS apart from any other system is its Logical User View component (LUV).

LUV gives the user a relational view of data, completely insulating user programs from the DBMS, data structures, accessing strategies or physical locations. Users no longer need to know file types or locations.



Using just four verbs: "GET", "INSERT", "UPDATE" and "DELETE", two dimensional relational views are delivered to the users.

The result is faster and simpler application development and no further need for program changes due to alterations in hardware, software or data storage.

Also by insulating user interfaces from the physical environment, LUV simplifies the use of high level facilities - TIS batch and on-line Intelligent Query, TIS 4th generation application development system, TIS

# Cincom Systems

Your strategic software partner

Batch Retrievals and TIS support for conventional programming. TIS is compatible with Cincom's range of DB/DC products currently installed by over 5,000 DBMS users. For more information, details of seminars or a demonstration please contact Jackie Duncan, Marketing Services, Cincom Systems (UK) Ltd., 101, The House, Maldenhead, SL6 1QS. Telephone: (0628) 72781 Telex: 847198. Or contact our Manchester office.



# Making the most of an emergency

IT IS nice to see that the series we published on computer disasters has not been ignored by the industry. Several disaster recovery services have been set up, and recently two more joined the throng.

They serve different sectors of the market, one from Anglo American Computing Services being aimed at minicomputer users.

The other, a multi-million pound joint venture between BL Systems and Atlantic Computer Leasing, Europe's largest IBM leasing firm, is aimed at mainframe IBM users.

The difference in scale of the two services is reflected in the mode of operation. Anglo offers a mobile recovery service, damaged hardware being replaced with the nearest equivalent on-site. The service was launched late last year with a Hewlett-Packard 3000. Two Digital Equipment PDP-11s are on order, with Vax to follow later and IBM 4300 Series after that.

"We have had a lot of enquiries from IBM sites," says Anglo's managing director Peter Maxwell Jones.

Users subscribe to the Anglo service for £2,000 a year in the case of Hewlett-Packard hardware, or £2,400 if they want the DEC PDP-11 cover. This price includes an insurance policy supplied by Eagle Star to cover transport and other costs.

The BL service, being for much larger hardware, is necessarily immobile and more expensive. So it cannot cover when a computing facility is needed on-site such as for some real time applications.

But it is comprehensive, and fast to enact, with BL guaranteeing an almost immediate transfer of service to its site when a client's computer fails. So far the service, called Failsafe, has an IBM 3033 AP, and there are plans to install a 3081.

Prices range from £40,000 a year for a limited service, to £120,000 for full cover.

For this the user gets consultation on telecommunications needed, and a trial to show that the system works. "They know they've got a working service when

they sign the contract," says Failsafe consultant Colin Berthelsson.

Failsafe provides the user with a parallel computing service with transfer of files taking a matter of moments. The user then has the IBM mainframe with several thousand square feet of computer room floor dedicated to his processing.

Meanwhile Anglo has dealt with its first live disaster. Market Locations of Leamington Spa had its solitary Hewlett-Packard 3000 Series 44 scorched by arsonists on January 17, with disc drives burnt out.

The computer was a vital part of the consultancy service. Several applications included calculating how salespeople should best organise their visits, and making statistical analyses.

Anglo sent in its HP 3000 Series 3, a machine compatible with the 44. Well, almost compatible: there were a few teething troubles. And Anglo found a sad lack of emergency lighting in its van, so had to use torches to unload the hardware.



Computers are playing an increasingly important part in rural Australia.

## Farmers beat the drought by computer

AUSTRALIAN cattle farmers, reeling under one of the worst droughts since their country was deported from British rule, are being helped by computer programs developed at Melbourne University for analysis of herd data.

Farmers can receive advice on the feeding requirements of their herds, as well as breeding and health hints by submitting monthly reports on the condition of their cows.

"It costs the farmer A\$1.50 to join, and A\$1.50 per cow a year," says Dr Lance Foster, university's department of veterinary clinical sciences. "After years he is receiving a return of about A\$7 for each cow invested."

In fact computers are spreading like wildfire through Australian agriculture. There is a A\$100 project to computerise milk production, also a videotape system bringing market information to farmers.

Meanwhile Australia's big agricultural data processor, bureau ABRI has attracted 100 clients since its birth early last decade.

## PEOPLE



Baynon

## Managing director for Micom-Borer

MICOM-BORER has promoted its technical director, Ken Baynon, to managing director. He has been with the company for five years, joining as technical manager prior to the merger of Borer Electronics with Micom Systems of California. Last year he held joint responsibilities of technical director in the UK, and those of developing the recently-launched Micro 4000 high speed modem range in California.

Before joining Micom-Borer he spent five years with Rascal Milgo as UK engineering manager. Prior to that he worked in design and development at GEC, specialising in satellite communications.

Micom-Borer was formed in 1980, following the merger of modern manufacturer Borer Electronics and communications giant Micom Systems.

Micro Memory Systems, part of the Grundy Group, has appointed three new members of staff. Larry Allen has been appointed sales manager. He was formerly with Percec International.

Kevin Chessman and Simon Kay will be working in complementary roles as software systems engineer and hardware systems engineer. Chessman was previously with Aydin Controls and Kay joins from Pericom.

Floyd Kvamme has been named executive vice-president, marketing and sales, for Apple Computer in California. He was formerly president of National Advanced Systems.

Data General has reorganised its marketing function. The department now includes marketing specialists responsible for products, applications, OBMs and communications. Its functions will include the independent software vendors programme. Bill Cadogan (above) has been appointed marketing manager. He will also continue to take responsibility for systems engineering.

New manager of Prolog Systems' IBM division is Jim Trussion. He was formerly a senior manager with Marcol Computer Services.

Management consultancy firm Howard Tilly Associates has appointed Richard Spooner and David Farnas as directors. Spooner has been chief accountant and financial controller at the Yeoman Aggregates group of companies for the past three years. Farnas qualified as a chartered accountant with Howard Tilly in 1975.

Package Programs (PPL) has appointed Ken McNaughton as sales executive and Richard Tibbets as marketing support consultant at its decision support systems division. McNaughton joins from ICL, where he spent the last 12 years in software marketing. Tibbets was formerly with Applied Data Research, where he was in sales.

Prime Computer has expanded its UK sales force with two new appointments. Adrian Coppola, who joins the North-east and Scottish branch, was formerly with NCR. Senior sales executive for oil sales in Peter Irwin, who was previously with Kongsberg.

## DIARY

FEBRUARY 27-28

Meeting. BCS Primary Care group. Royal College of General Practitioners. Details from Dr Mike Sheldon on (0602) 700111.

MARCH 1

IDPM examination syllabus. IDPM Birmingham branch. New Imperial Hotel, Temple Street, Birmingham. 7.30.

MARCH 2

Budget preview - more work for DF. IDPM Central London branch. Altergo, Imperial House, 15-19, Kingway, London WC2. 6.00.

## CONFERENCES

EXECUTIVE and Professional Training is holding a seminar aimed at increasing success and effectiveness. Key topics are the individual's goals and attitudes and how to transform them to achieve what the individual wants; although the following will also be covered: Increasing productivity; more successful selling; increasing creativity; more effective communication; and being more relaxed and at the same time more effective. The seminar lasts four days and costs £400 + VAT. It will be held at the Kensington Hilton Hotel from March 8-13 and March 24-31, and again in May and June. Details from the organiser on 01-455 4063.

ROMTEC and Interco Business Systems are holding a conference designed to help microcomputer dealers identify profitable vertical markets. The conference will be held on March 25-26 at the Heathrow Crest Hotel. Speakers are from IBM, DEC, ICL, ACT, CIRA, Romtec, Computerland, Ashton-Tate and Interco. Details from Christine White on 01-948 3111.

The death of the mainframe - is it a current day dinosaur? IDPM Sussex branch. Speaker Kevin Cahill, financial editor, Computer Weekly. Training Centre, Excess Insurance, Hill Barn Lane, Worthing. 7.00.

Information technology - the SDP View: New party, New ideas? Speaker Ian Wigglesworth MP, SDP spokesman on technology. IDPM West London to Oxford branch. Bull Hotel, Gerrards Cross. 7.30.

## There's life in the contract market yet

IMMEDIATE prospects look good for contract operators as agencies report 20% more placements than this time last year. The threatened extinction of mainframe computers will eventually diminish the market, but not before demand grows a little in sympathy with the rest of the industry.

"There are enough mainframes around to last us a few years," says Gary Totten, manager of operations for KPG Computer Services.

The view of Derek Peet, contract operations sales manager at agency giant VLI is a little less optimistic: "The market will decline - it has to. But the next year is looking healthy."

Peet thinks the field for contract operators has broadened. There is already less work on traditional mainframes, but so far that shortfall has been made up by more work on minicomputers like the Digital Equipment PDP-11.

People with good technical support skills can find work, as can IBM operators. But there are excellent ICL people who have been out of work for ages, Peet says. To be employable, the young contract operator should have a car and be willing to move anywhere at short notice.

With large machines, it is the peripherals that need operating



PEET... Field for contract operators has broadened.

rather than the central processor. VLI has an IBM contract in Warwick where the vast main computer room is empty and the contract operators busy themselves with printers and tape drives.

About half of all contract operators work as limited companies, which means that they pay their tax just once a year rather than having it deducted at source as PAYE. But few are paid directly by the companies or organisations whose computers they serve.

Instead they are paid by agencies which pass on to them about 70% of the fee charged.

## Assembler system gives sales team maximum profit, minimum stock

TIME is relative, and five seconds can seem an eternity for a salesperson with an impatient customer waiting for a quote on the phone. Fast response is therefore vital for systems designed to give salespeople immediate information about stock levels.

The High Wycombe electronic components distributor Axiom Electronics knows this only too well. As a result it chose software written in assembler code for its stock control and information network.

Assembler is slow to write, but it still yields faster programs than those written in high level languages like Cobol.

The system is based on the Molecular Mark IV made by British Computers (BCL) which also supplied the skeleton of the software. Axiom then hired Record Software to tailor the system with

more assembler routines.

The system gives salespeople a terminal on their desks for quick access to stock levels and the state of customer accounts. As a corollary, information on fast and slow selling components is provided with the aim of keeping just the right amount of stock. In five words: maximum profit for minimum stock.

Marketing director Bill McKnight is delighted with the software especially, and says that apart from its speed it has the advantage that the same product cannot be sold twice during a hectic telephone selling session.

Surprisingly it can happen with other systems, McKnight explains, when two salespeople look up a particular line of stock at the same time. Both see that there is some left, and both sell it. Axiom's software updates the

system the instant a sale is made and so a salesperson can feel self embarrassed by looking at a product, finding it is then being unable to make the sale because someone else got in first.

The diamond centre of Axiom agrees not to stock a brand of any component Motorola makes. As a result 15,000 different Motorola components are held in the Axiom computer, even though only 6,000 are usually in stock.

When a customer orders a Motorola component not normally in stock, the system indicates how long it will take for it to be ordered and delivered. Shadow stock is the name for such components.

Axiom stocks the products of other makers when there are Motorola equivalents: Spang pacifiers for example and a brand of soldering iron.

## Sig/Net 202 does the dirty work in Sri Lanka

by John Riley

THE Shelton microcomputer Sig/Net 202's ability to survive months of use in dusty and muddy conditions on a London archaeological excavation, has led to its use by the Sri Lanka Ministry of Culture.

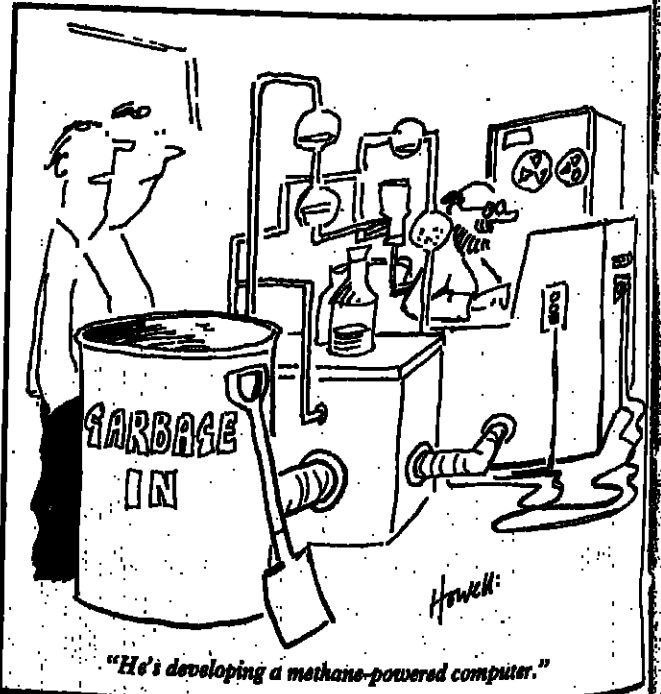
Dr Ian Graham, of the Institute of Archaeology in London, who is playing a key role in co-ordinating data entry packages in British archaeological, introduced the machine to Sri Lanka in January. It is now being used on a prestigious national archaeological programme and Wang is helping with the training.

Work so far has shown that the machine stands up not only to dust but also to heat, and another four to five machines are to be shipped out in June.

"We were looking for robustness," said Graham, "and the machine's peculiar mechanical design - with three loose circuits connected with a Sig/Net 202 (a 286 10 bus) - makes it easy to fix."

The Museum of London has been successfully using the Sig/Net 202 micros to record databases on the Saxon excavations at Billingsgate, in London.

Workplace is compiled by Philip Hunter.



"He's developing a methane-powered computer."

## PUZZLER

I HAVE before me an equilateral triangle, drawn on a sheet of paper. On it, I have marked a point 3cm from the top of the triangle, 5cm from the bottom-left corner, and 7cm from the bottom-right corner.

What length is the side of the triangle? See page 45 for solution.

## APPLICATIONS SOFTWARE WRITTEN IN C

Large Micro computer company wishes to distribute vertical applications and general business software written in C.

If your products can benefit from an outstanding level of visibility nationwide, and your software house is interested in the substantial financial rewards we're offering, then reply to

Box No. 1249 NOW!

## The logical alternative

LOGIC analysers are the vital tools for ensuring that microprocessors have been correctly programmed for their destined task. The trouble is they are complex and expensive.

That was until a Plymouth Polytechnic student, Charles Tipton, decided to do something about it. As part of his undergraduate project, he designed a cheaper alternative - and picked up a £300 cheque for his trouble from the Mullins Design group as one of its annual award winners.

## A new star is born



## 16 BIT BUSINESS SOFTWARE

PULSAR business software is the creation of ACT - the company behind the Sirius 1 and recognised leader in 16-bit personal computing. The new PULSAR range, developed by ACT at a cost in excess of £1 million, takes full advantage of the power and expandability of 16-bit computers.

It is inherently faster and more powerful than traditional 8-bit software.

And it is a true 16-bit range - designed and developed by ACT's own software engineers.

THE PULSAR RANGE			
Sales Ledger	£195	Inventory Data Base	£295
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AVAILABLE NOW FOR SIRIUS - IBM PC and DEC Rainbow coming soon.

For more information on the new PULSAR Range clip the coupon and return to  
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# A City Gent with all the panache of a politician

CHRIS GENT is just a little too neat and clean cut for the computer industry.

But he is just what you might expect an ex-chairman of the Young Conservatives to look like: dark, well groomed hair, smooth and charming features, the obligatory pin-stripe suit.

There is no impression, so common in the industry, of the bourgeois cloth trapping a wild soul, just waiting to escape into jeans, jesus boots and beads.

Yet his industry credentials are impeccable. He has emerged at 34 as managing director of that long time joint backwater belonging to ICL and Barclays Bank, Baric Computer Services.

Prior to his emergence in the hot seat of what used to be Britain's biggest batch processing bureau, he worked in the computer division of bankers Schroeder Wagg, and before that he was at NatWest Bank.

He has survived from it all remarkably unscathed and even wears his former political background with panache, approaching publicity with the eagerness of a public figure.

On the morning of our interview *The Times* had profiled him, mostly as a politician, which led to the obvious question: Would he go back to politics?

## DOWNTIME

### Who's interested in IT?

TO discover what impact information technology has had upon laymen and women, *Computer Weekly* has stooped to stopping people in the street.

I admit we only asked five people, but my gut instinct tells me that they happened to be the right five. Only one knew what IT was.

The reason for this ignorance is, of course, that the mass media find the subject tedious and boring — unlike us here at *CW*.

The *Daily Mirror*, for example, has a perfectly competent technical journalist who occasionally turns up at Press conferences. But he might almost as well not exist, since he hardly ever gets any space in the paper.

### Still punching

ONLY days after reading in a dictionary of computing terms that punch cards are "virtually obsolete", I was faced with trying to get hold of some for a display.

As this proved to be no easy task, I began a process of elimination, working out where "obsolete" equipment was still likely to be used routinely.

So, I rang up my old University Computing Centre where I found hundreds of happy users contentedly punching cards.

No, not now, he said, and continued: "It's very rewarding and challenging to be in business during a recession."

In politics, Gent said, merit and achievement are much more chancy. In business you can make a decision and really motor.

So far he's definitely doing that. Two years ago Baric was 90% batch bureau with little or no growth showing in either profits or sales. Now, Gent claims, Baric has batch processing as 50% of the business with the balance spread out in real time processing, software production, and facilities management.

In the course of further developing Prestel as a market research and clinical trial tool for pharmaceutical companies, Gent hopes to create a significant role for Baric in the health care field.

All this should push Baric to turnover of £15 million for fiscal 1983, compared with £13 million in 1982, according to Gent.

He spoke at some length of Baric's role as the biggest vendor in the country of ICL's DRS distributed network system.

Baric, Gent noted, is the largest trader within the Tradepoint network, though it does deal at arm's length with ICL.

This posed a question which brought Gent's political skills to the fore as nowhere previously in the interview.

"Why," we asked, "do you not take the currently fashionable route and buy yourself out of the clutches of ICL and Barclays?"

With what can only be described as an air of well managed shock, clearly implying that this was not quite the right kind of question, Gent stared the questioner, and the question, straight in the face.

He then moved the discussion to more mundane topics such as market share, the need for standards, and so on, without giving a clue as to what he would feel like as the managing director of an independent, quoted company.

He struggled manfully with a mass of acronyms and abbreviations — coining one of his own, TMFI: "Too many f--- initials".

The atmosphere rapidly became that of a pre-American election convention — Tim wearing his national flag shirt and sporting a red rose, plus balloons, bouquets, gold clocks being awarded.

Well, when you've got a big brother across the Atlantic, you've got to expect some of that old razzmatazz, haven't you?

There is also room for handy accessories such as digital clocks and calculators that can be used without switching the machine on, as well as a toothpaste dispenser for those late sessions.

Chad

Are you sitting comfortably?

DESPITE the emphasis on ergonomically designed workstations, not enough is being done to ensure true comfort for the users. What could be more user friendly and ergonomically acceptable than an in-seat coffee cup holder on the VDU, to keep the coffee warm with re-

cycled heat?

Chad

Are you sitting comfortably?

Chad

Chad

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Chad



GENT . . . "Rewarding to be in business during a recession".

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## PLATFORM

Eddie Bleasdale is managing director of Bleasdale Computer Systems

### Security at work is a myth in the computer industry

THE rate of change in the computer industry is so fast that job security is a myth. Developments in technology can be seen either as an opportunity or a threat.

Too many people in the industry choose to ignore these changes and hope that if they keep a low profile then new technology will disappear and not affect them.

Well, it won't. Over the last few years, the 8-bit personal microcomputer has become the biggest growth area in the industry, and the new generation of 16/32-bit microcomputers which outperform machines costing several times their price, will reach those parts of the market other micros have not been able to reach.

The reluctance or inability by people in industry to evaluate how these developments will personally affect them is possibly this country's single biggest weakness.

It is significant that in California there is considerable pressure on people in the computer industry to establish or work in high technology companies. No such pressure exists in the UK, and the blame is generally laid at the door of venture capitalists. This is not altogether fair.

As an industry we must respond quickly to the changes in technology. Failure to do so will result in products which are being developed in the UK and being publicly claimed as "significantly

ahead of the market" being undercut by imported systems which have been in volume production for some time.

Calls for import controls are a best naive and only serve to highlight the weaknesses of British manufacturers.

How can one react to changing technology?

1. Look to establish a career in growth areas. If your sector of the industry is not growing, the sooner rather than later you will ensure your job will be threatened.

2. Keep yourself fully informed of the latest developments in technology particularly in hardware and question how they will affect you.

For example, what effect will the following have: 32-bit microprocessors which outperform current 16-bit microprocessors; availability of low-cost 256 K memory chips; the development of high capacity, high performance low cost fixed discs.

Similarly, for software: Will Unix dominate the market? If you believe so — what are you doing about it? How do CP/M 86 and MS-DOS compare? Which will come more significant? What opportunities do they offer?

If you cannot get your organisation to react positively to these developments then change your job.

Alternatively you can take a step to establish your own company. Though if you are married, keeping your partner working so that you have a regular income is vital.

Some points to consider are:

1. Do not go to your bank manager expecting an unsecured loan. It joined the bank to have a nice career. He might be interested in high technology, but he certainly won't risk his career backing it.

2. Look at the changes that are taking place, and evaluate how you can exploit them. Can the work you have previously done be applied to these developments?

3. Venture capitalists in the UK tend to be conservative in making investments. As a result they are much-maligned, sometimes quite rightly, but there are other sources of finance available for new companies, for example, the Software Products Scheme and the Microprocessor Applications Project. Also the DoI-backed and firms loan guarantee scheme, although it has been widely abused, is still a source of finance.

4. Make sure your proposal is a well produced professional document.

5. Aim to run a company which adds a significant value to the products it sells. It is far easier running a company with a small turnover which has a significant added value than one with a large turnover and a small added value.

6. Do not compromise on quality. Always aim to provide the best service and product, so that your customers are willing to pay the fees you charge.

7. Join a group, such as the CPW User Group or the European User Group which enables you to become better known in the industry, you are working in, and try to co-operate with other companies rather than compete.

If you are not prepared to react to the changes in the market then despite having a boring career, your job security will in all probability be a good deal less than those who are prepared to exploit new technology and as a result have an exciting and interesting career.

Eddie Bleasdale

The Sun

The Sun

The Sun

The Sun

## Computer Weekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, February 24, 1983

### Why the winners have to go West

GO WEST young man! That was the cry of hope in America during the last century; for a few of the glittering prizes of UK computer companies it now may be the cry of despair.

The latest to go West, at least for finance, is Systime, the high-flying Leeds systems company which has seen its rapid growth overstretch its financial base. The move makes a lot of sense for Systime; the question is how much sense it makes for the UK computer industry.

The US Control Data Corp, which is to take a stake of over 30% in Systime, will provide valuable overseas marketing muscle for the UK company.

A cash injection of over £10 million in new money will also help Systime over the financial hurdle presented by its heavy expenditure on product development and a new factory.

The negative part of the equation is that one of Systime's major shareholders, the British Technology Group, would not provide the financial support that Systime needed. The BTG, set up to stimulate innovation, is now not even being allowed by the government to back a winner.

Barlier in the year it was Compeda, the BTG's computer aided design company, which was sold off to US company Prime.

The CDC/Systime deal is not directly comparable: BTG retains a stake — down from 29.5% to something under 20%; and Systime retains control.

As we said, for Systime it makes sense. But the way the deal came about doesn't say much for the UK's commitment to its home-grown industry.

### Restricted software

IBM took a leaf out of the independent software companies' books with the decision to stop supplying source code on some of its products. And the move could have far-reaching effects in the software business.

It seems the decision was prompted by two major factors: the sheer complexity of the source coding for MVS, IBM's large machine operating system, and its associated program products. National Advanced Systems estimates that the amount of coding associated with MVS has tripled over four years.

"The task of updating all of this is awesome for IBM," said one source.

The other reason smacks of something which IBM would not have done 15 or 16 months ago when the company was still under investigation by the US Justice Department: namely to put a damper on the activities of the independent software suppliers which rely on IBM's source code listings for a large part of their information about IBM products.

Both Amdahl and NAS agree that, as things stand, with only a few programs on the totally restricted list, the move will not affect them. But the number of products on the list will grow; this could affect both companies as they try to compete with IBM across a wider front.

One thing seems sure at the moment though — that the really large-scale products will not be added to the list. It is in these that users make the most modifications and IBM is unlikely to try to prevent them, unless it goes the whole hog and becomes purely a supplier of standard packaged systems — take 'em or leave 'em. That is not beyond the realms of possibility, but it is improbable.

At the moment it looks as though IBM is playing with an idea and saving itself some time and effort in the long term. Just where the idea will lead is open to speculation.

The first effect will be relatively small. But it is only part of the revolution taking place in the IBM software market: the company is at any moment due to start general availability of its flagship operating system — MVS/Extended Architecture. And, with it, a whole new charging system for software.

IBM might be aping the independent software companies at the moment, but when MVS/XA hits the streets those companies could be extremely worried if IBM takes too many leaves out of their book.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by M. E. Martin of Northolt, Middx., who writes:

Psychologist George Kiss has won a £27,000 grant to programme a computer at Warwick University to "feel" emotion and "fall in love".

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## LETTERS

### Talking books for blind Students in plea for jobs

THERE are now over 3,000 technical helpers looking after "talking books" for the blind in Britain but there are over 50,000 blind readers needing help — 4,300 of them are over 90 and we have as many as 150 over 100-years-old. Although we have a large number of helpers, there are still some 40 areas throughout the country where we are desperate for further helpers.

These volunteers come from a wide range of technically trained electrical or electronic engineers and each is able to look after up to ten or more blind people: to visit them when required and to assist in repairing generally minor defects to their sets.

Would you be prepared to give up some of your time for this work? The time involved probably does not exceed about one hour

per month for looking after six of seven blind people.

The blind have tape reading cassette-type playback units and are supplied with tapes from a large library in London. Help is needed to install these, initially by fitting a plug and by giving some guidance to the blind whose average age is over 70 and many of whom are very poor.

Those who are prepared to assist or would like further details should please write to me. Assistance would be very greatly appreciated.

D. FINLAY-MAXWELL  
Hon organiser, Voluntary Helpers for the Blind

British Talking Book Service for the Blind  
c/o John Gladstone & Co  
Wellington Mills  
Huddersfield HD3 3HJ

I AM a sixth form student and frequently read the copy of *Computer Weekly* delivered to my computer science teacher. I am very keen on computing and I wondered if you could help me.

I have eight "O" levels including maths, computer science, physics and chemistry, all at grade B, and am at present taking three "A" levels (maths, computer science and physics). I would like a job as a technical systems analyst or some job involved with the electronics of the computer.

Can any of your readers tell me what are the best steps to take after completing my college course? Perhaps there are other young people wanting the same information so why not have a small area in *Computer Weekly* so that letters such as mine could be printed with a reply? I am sure this would be very useful to other students.

D. A. LEATHER  
138 Moorwell Road  
Scunthorpe  
South Humberside

The Editor welcomes letters on subjects published in *Computer Weekly*, or on original topics.

## A MAJOR COMPUTER EXHIBITION IN THE HEART OF INDUSTRIAL WALES.

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# PREVIEW OF CAD NORTH

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TO ANYONE primarily involved in the more regular side of computing - that is to say, manipulating numbers and words - looking at the field of computer aided design (CAD) is like being given a sudden peek into a can of worms. And trying to say whether this particular can of worms is being handled correctly by the government is correspondingly difficult.

The problem lies in the messy nature of CAD itself. Everyone knows that computers can be made to handle images and, therefore, design work. In fact, most people could, at a pinch, knock up a bit of a graphics package on their own machine.

Things start to get messy when these graphics - maybe intrinsically nice - have to be made to do something useful, such as helping the industrial user to make something and, ideally, making it at a profit. And that is an indescribably messy pass to come to, simply because the path to marketable products is not a nice, tidy route of the sort that normally inhabits the computer itself.

Consider the history of the beast. It started, back in the 1950s, in a number of isolated areas. There was CAD proper, in which computers were used to help draughtsmen. There was GNC (Computer Numerical Control), in which computers were used to control production equipment. And, later, there was CAT (Computer Aided Test), in which computers were used to assist in testing the finished products. And, later still, CNC became CAM (Compu-

CAD North opens next week. Here Chris Naylor looks at government aid

## A range of schemes to help spread the word

ter Aided Manufacture), in which computers really got in on the process of production. So much for the terminological skim through history.

But imagine what it might be like if all of these things were tied together in an integrated whole.

Your firm wants to produce a product. So design it using CAD. In the process of doing that a database is built up which contains an exact specification of the items to be manufactured. So use that database to drive the CAM side.

Ideally, at every CAD workstation there could be a little button marked "Build It" which is pressed when the CAD is complete and which starts the CAM rolling. And, as the finished product drops out of the jaws of the CAM device, it might as well be picked straight up by the CAT device which, using again the CAD database could, in theory, carry out a complete computerised test of the finished product to make sure that

this product is what was wanted in the first place. And, if any problems occur as the product goes through this cycle, they can always be fed back into the original CAD database to the designer.

And while all this is going on the few human beings in the place sit around their terminal drinking tea and watching another computer which, from the same database, is working out how much profit everybody is making.

The only snag with this scenario is that no-one can put it into effect as yet. The problem is: How can we get from where we are now to this Utopia? And how can we get there faster than, say, the Japanese?

If the government could lay down a route from here to there, its record on CAD would be excellent.

But the government has not laid down any such route, because routes are things you lead inert objects along. And the objects to travel down this route are the many thousands of firms that make up UK industry. The object of the exercise has not been to stand in front of these firms pulling them along, but to stand in parallel with them, trying to provide help as they travel under their own steam.

This help has fallen into four broad categories: seminars, demonstration centres, consultancy and capital.

First a company might express some initial interest and want to know a little more about CAD - so give the relevant staff a one-day seminar. That whets their appetite, so let them go to a demonstration centre to play with some CAD kit. At this point they're getting really interested, so let them have a

consultant to work out what they might do in their own firm. And then, to help them buy, give them a capital grant towards the cost of the new kit.

At that, the schemes seem pretty straightforward. And it could, possibly, be argued that to look at it more closely only blurs that nice four-step initiation process. But to give a few names and numbers, the two main schemes are CAD/CAM (Computer Aided Manufacture) and CADMAT (Manufacture and Test). Basically, both schemes were set up by the Department of Industry during IT82 and are to run for a total of three years. CAD-CAM tends to concern itself with the "heavy" engineering side and CADMAT tends towards the electronics side. This split is emphasised by the involvement of the Institution of Mechanical Engineers (IMEchE) in CAD/CAM and the Institution of Electrical Engineers (IEE) in CADMAT. Funds put aside for the schemes were £6 million for CAD/CAM and £9 million for CADMAT.

A further £12 million over two years has been allocated to assist firms in purchasing equipment with grants of up to one-third of the total cost being made to cover hardware, software and consultancy.

In a way, the organisation of the schemes is probably more difficult to understand than the schemes themselves. For instance, if a firm was going for an integrated CAD approach, as per the pipedream, it would probably begin to come under the wing of FMS (Flexible Manufacturing Scheme) with its set of aids and grants. And if a firm wanted to develop CAD kit it might well come under the wing of SP8 (Software Products Scheme).

with its aids and grants.

And if a firm whispered the word "microprocessor" in the hearing of the DoI it would probably never recover from the full weight of money thrown at it.

But the fact remains that, despite the many names, the concepts of help are simple enough because they are all based on a process whereby an interested firm would only have to make one phone call to any part of any of these schemes and fairly well-committed people will start to channel them around until they fall into a helpful slot. And, at that stage, it isn't so much what the schemes are called, or how they're formally organised, so much as whether or not they work.

Brian Gott of the Computer Aided Design Centre at Cambridge (CADCentre) appears nicely detached in his views on government aid given that the CAD Centre is DoI-funded.

"One is always a bit torn about government help," he says. "Some argue that it softens people, that they should stand on their own feet, but this time around we're getting a lot of feedback from people saying it's just what's wanted. The government seems to be doing about the right amount. People never like to admit what they don't know - they like to be able to come somewhere where nobody's trying to sell them anything, but there the staff know what they're talking about."

### Some useful names and numbers

THERE are a number of places you can go to find out more about CAD under the government's awareness schemes. But whichever number you ring, the person at the other end should be able to point you in a suitable direction.

CADMAT general information, IEE ..... 01-240-1871  
CADMAT demo centre, IEE Hitchin ..... 0462-53331  
CAD/CAM general information, DoI ..... 01-212-5789  
CAD/CAM demo centres:  
Birmingham, Hugh Humphries ..... 021-327-3401  
Manchester, Mike Looney ..... 0625-25421  
Cambridge, Dennis Payne ..... 0223-63125  
Newcastle, Jim Thompson ..... 0632-625242  
Glasgow, Dick Simm ..... 03552-20222  
Capital equipment purchase scheme, DoI ..... 01-213-7404

That is largely what is going on under the government's schemes - the seminars, demonstration centres, consultancy (not to mention the money) come from knowledgeable people with no particular axe to grind.

"It is a practical thing they try things out for themselves. It's like buying a car - you want to try it out to see what it does," says Gott.

This is where the value of the demonstration centres comes in. Impartial places where newcomers can "try things out at a reasonable, unpressured pace".

Gott's views are echoed by Dr Elizabeth Laverick, IEE project director for CADMAT. "It's just the suppliers who can pressure you," she claims, and lists that many pressures come from within the potential user's firm.

For example, Laverick outlines a situation in which a potential CAD user is under pressure from, say, his parent firm to adopt a particular CAD approach. This may be to bring him in line with overall corporate policy, although the corporate approach may not be suitable for the user's activities.

Of those who attend seminars and demo centres about 40% are genuine naive users (or would-be users), about 20% are consultants, and about 40% are people with CAD systems which are not fulfilling their requirements.

The first group of people very much of course, expected. But the other two? Gott says: "The reason they wave their problems around at our centre is because the vendors haven't solved them. This might not be the vendor's fault - the problem might be that of linking systems together and the vendor aren't really in that market. The vendors might just be selling a single module - even IEE doesn't always do a complete job of linking things." Needless to say, he sees this sort of high-level consultancy expertise as a growth area in itself.

## PREVIEW OF CAD NORTH

# Market growth brings wide range of design products to the show

CAD North exhibition will give many suppliers access to a new market . . . Boris Sedacca reports

THE GROWTH of the market for computer-aided design and manufacturing (CAD/CAM) has gathered such speed that a single exhibition held every two years is no longer sufficient for suppliers who wish to establish a presence in the field.

So the organisers of the CAD exhibition decided to launch CAD North to allow exhibitors to reach their prospects more frequently.

CAD North takes place at the Bellevue Hall in Manchester on March 1-3 from 10am to 6pm on Tuesday and Wednesday, and from 10am to 5pm on the Thursday.

Minicomputer manufacturer Prime has made significant inroads into CAD/CAM, a development which culminated in the company's recent takeover of UK CAD specialists Compeda. Digital Equipment looks set to become a serious challenger with its Vax range of 32-bit minicomputers.

Compeda has the second largest stand at CAD North after McAuto and will now include exhibits from Prime.

The company's exhibits are aimed at three areas: first mechanical engineering with a product called Dragon, a two-dimensional draughting system; secondly, a Plant Design Management System (PDMS) for the petrochemical industry; and thirdly, integrated circuit design aids with a product called RDTF.

Compeda played an important part in the CAD North organisers' decision to set up an exhibition specifically for the North. "The North has a lot of potential and we have many existing customers there," says Jane Feehan, marketing services co-ordinator for Compeda.

"We felt that the CAD exhibition was predominantly attended by people in the South. I believe we will reach a market this year which we did not reach last year, particularly in the Midlands and in the North."

Versatec will show a range of electrostatic plotters including its Random Element Processor, a microprocessor-based device

which eliminates the host processing computing overhead previously needed for electrostatic processing.

With the VRP, a user can produce high quality drawings and reports on Versatec Electrostatic plotters quickly and with no more host processing than a pen plotter would need.

Also shown on the Versatec stand will be the 8236F 56-inch wide film plotter, which allows drawings to be overlaid for applications such as mapping geophysical and business graphics, and the Model 430 offline plotting workstation, as well as three Model V-80 high resolution printer/plotters.

Imtec will demonstrate its Series 2 high resolution vector-refresh intelligent graphics terminal providing local hardcopy from screen. The system is based on an Intel 8086 microprocessor under firmware control in read-only memory (ROM) and 64 Kbytes memory for the display list with optional extra 128K bytes.

A light pen is offered as a standard feature with an optional tablet allowing parts of a picture to be deleted or moved without having to redraw the entire picture.

Benson Electronics has its own stand although many of its products can be seen as part of the other exhibitors' displays. Included with its range of electrostatic plotters will be a new machine called the Model 1565 drum plotter accommodating a single sheet size up to A0, which replaces the older Model 5342 but adds features such as a screen and keyboard for operator control at roughly the same price.

Norrie Hill will demonstrate three systems, although one of them, the Genie, will be a low key

affair according to sales and marketing manager Bill Reakes. "The Genie was previously called the Source 45, based on the Hewlett Packard 9845 desk-top computer. We are now pushing the software only at a price of £2,500."

The software provides two dimensional draughting facilities with bill-of-materials processing, numerical control programming and finite element calculations.

Terminal Display Systems is well known in the North with its home town in Blackburn, Lancashire. The company will launch a low-cost desk-top engineering graphics terminal from Megatek providing high resolution graphics in firmware at the terminal end.

With a resolution of 640 x 480 and operating at speeds up to 19.2 Kbaud, the 1650 is software compatible with the top-of-the-range Megatek 7600 and 7200 series.

The company has recently been appointed as a Motorola distributor and will run a piece of software called VERSAgraphic which it has developed with US-based Graphic Strategies on the Motorola Exor-macs microcomputer, featuring low-cost raster graphics and housed on a single printed circuit board.

Control Data plans to launch its new Integrated Computer-Aided Engineering and Manufacturing (ICEM) package, featuring new delivery systems, training packages and supporting professional consultancy services.

The company will run demonstrations of the ICEM/800 based on the recently announced entry level Cyber 170/815 via remote link to its North London ICEM centre. Also demonstrated will be a full curriculum of CAD/CAM training packages developed by Control Data for use on the Plato



Ferranti Colec will demonstrate its CAM-X computer aided engineering system on Stand 401.

CBE system. Cambridge Interactive Systems is featuring turnkey computer-aided design, draughting and manufacturing systems based on Prime minicomputers and its Medusa software. The company will illustrate applications in a variety of mechanical and electrical fields.

Ferranti Colec will demonstrate its CAM-X computer-aided engineering system, including the full range of applications software. The stand will feature a CAM-X workstation, incorporating colour raster graphics display and connected online to a Digital Equipment Vax minicomputer.

Examples of CAM-X 2D design and draughting, 3D solid modelling, numerical control programming and records management software modules will be demonstrated.

Pragma will be showing the Chromatics CGC7900 and CG series colour graphics computers and the Trilog Colorplot printer. The

CGC7900 is designed for standalone use but can also be connected to a host computer. It features a 16-bit processor and a range of languages and software packages. Tektronix will be demonstrating its 2D draughting system based on 4054 desk-top computer. The company's display will also include the new 4691 colour hard copier using an ink-jet air flow technique and providing a resolution of 150 dots per inch, in conjunction with a Tektronix 4113 colour terminal.

## COMPUTASTARS



## Still time to shine in Computastars

ENTRIES are still open for Computastars - but only just. There's only one week to go and places are allocated on a first come, first served basis, so post off your form to the organisers quickly to avoid disappointment.

Full details of the competition can be found in the February 3 issue of *Computer Weekly*, or from the organisers at the address on the entry coupon.

Computastars is open to both men's and women's teams, each comprising between three and five members. Cost is £37.50 per team, with an additional payment of £20 for teams reaching the UK final. There will also be a charge for

teams going on to the European final, which will be announced when the location has been finalised.

The brawny types among you may be interested in the tug-of-war contest, run alongside the main competition. Called somewhat unsurprisingly Computastug, the event can be entered by teams of six men or women, as long as these entrants are not involved in Computastars itself. Entry fee for Computastug is £10.

If you have any queries about Computastars, don't contact us at *Computer Weekly*. The man with the answers is Gordon Coirns. Tel: 01-688 6690.

## UK dates

Birmingham Saturday April 30  
Enfield Sunday June 5  
Enfield Sunday June 19  
Barnsley Saturday June 25  
Birmingham (UK final) Saturday July 23

## COMPUTASTARS ENTRY FORM

We have read and accept the conditions of entry for the Computastars/Computastug 1983 and would like to enter

Main competition ..... Men's teams ..... Women's teams  
Small units ..... Men's teams ..... Women's teams  
Veterans ..... Men's teams ..... Women's teams  
Computastug ..... Men's teams ..... Women's teams

Names of team(s) .....

Company .....

Address .....

Name of contact .....

Telephone ..... Extension .....

Signature of DP manager or equivalent authority .....

Position held .....

We would like to compete in the following region:  
NORTH (BARNESLEY) ..... MIDLANDS (BIRMINGHAM) ..... SOUTH (ENFIELD) .....

please circle appropriate region

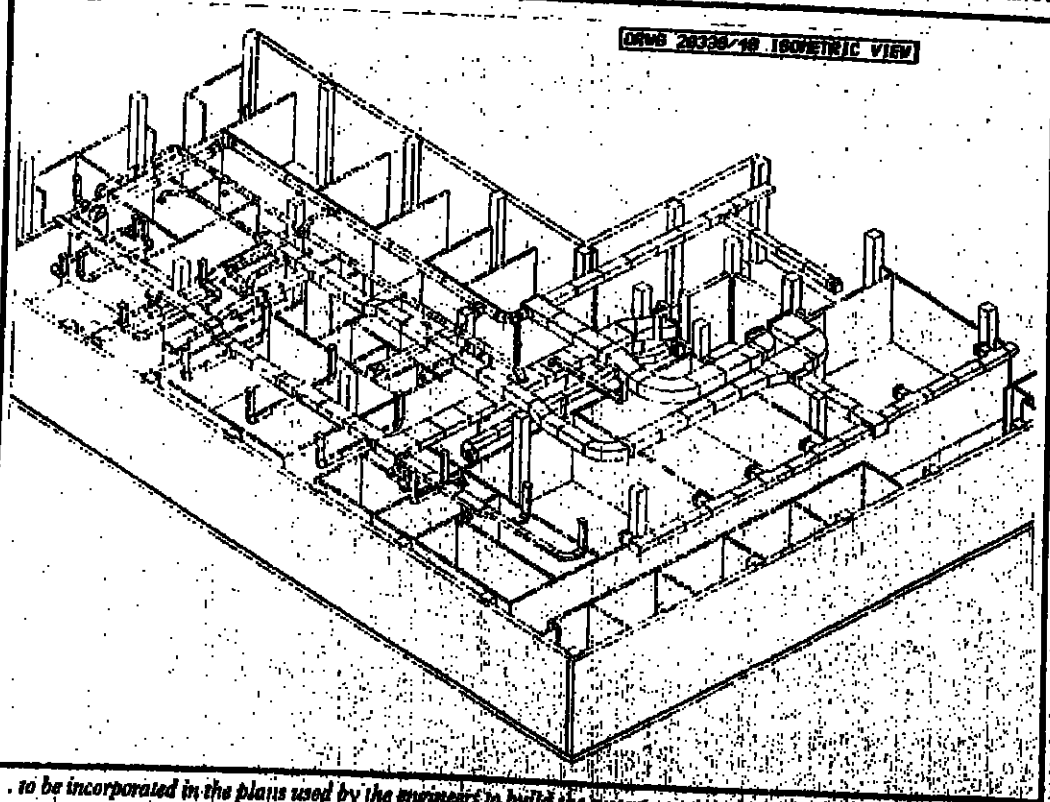
Enclosed is £..... to cover the entry fees for the team(s). Cheques should be made payable to Computastars Ltd.

In all matters relating to the rules or conditions of entry, the decision of the organisers is final.

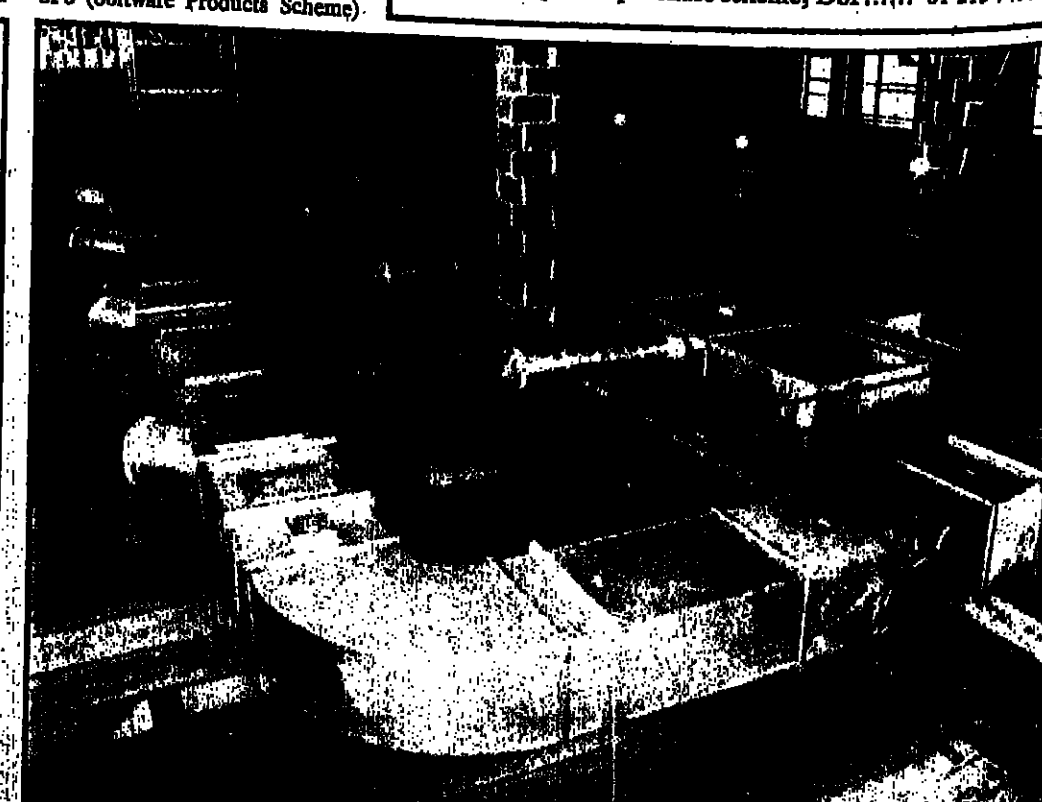
Please send entry form and fees to Computastars, 117b High Street, Croydon CR0 1QG. Telephone 01-688 6690



Using a CAD terminal the designer can develop his ideas . . .



... to be incorporated in the plans used by the engineers to build the system



resulting in a final product which matches requirements exactly

## Your guide to exhibitors at CAD North

Company	Stand number	Data Type Terminals	429	Pragma	106
Alper Systems	131	Department of Industry	244	Quest CAE	202
Ambros	107	Digital Equipment (DEC)	247	Radax Computational	120
Apollon Computers	408	ERM & D	404	Riva Terminals	434
Applied Research of Cambridge	437	Engineering Computer Systems	240	Robocorn	546
Benson Electronics	410	Ferranti Colec	401	Rotring UK	254
Burroughs Scientific	100	Gerber Systems	101	Shape Data	237
CAD/CAM International	551	Graphic Information Systems	439	Sistron Electronics	425
CAD Centre	121	Harper & Tunstall	234	Stradler	457
Calcomp	422	ICL	137	Stage One	447
Cambridge Interactive Systems	423	Imtec International	420	Terminal Display Systems	524
Can Con	123	Intergraph	550	Summagraphics	111
CEGB	133	ITT	453	Techax	438
Compeda	210	McAuto	553	Tektronix	414
Control Data	147	Micro Aided Engineering	231	Versatec	418
Counting House Computers	407	Nicolat Laboratories	553	Westward Micro Systems	124
Dale General	118	Norrie Hill	225	Whetstone	141



# Automated design speeds the development of diesel engines

Boris Sedacca reports on the use of CAD at Perkins Engines where workstations have replaced drawing boards to speed the design process

DIESEL engine technology is advancing swiftly, mainly in the areas of combustion and alternative fuels such as alcohol and coal-derived synthetic fuels.

Diesel engine manufacturers need to speed their design process to compete and in order to respond swiftly to market demands. Many have come to recognise computer-aided design as a valuable and almost indispensable tool for this.

Perkins Engines, one of the world's leading manufacturers of diesel engines, is one such manufacturer. The company is a subsidiary of Massey Ferguson. It runs two IBM mainframes for its routine commercial applications—a 3033 and a 370/168—to which about 400 terminals are linked. There is also an online link into Massey Ferguson's worldwide commercial network.

The company makes more than half a million engines every year in

factories in 19 countries. About 200,000 of those engines are built at the Perkins plant at Eastfield in Peterborough, which the company claims makes it the largest diesel engine manufacturing facility in the world.

The Perkins computer-aided design system is based on a dual-processor ComputerVision installation comprising two CGP 100 processors to which 11 workstations are linked.

A workstation, in Perkins terminology, is regarded as a replacement for the draughtsman's drawing board, and consists of a large graphics tablet and digitiser. A menu on the tablet allows the draughtsman to choose functions as required but a normal keyboard is used for entering numeric data. Two pen plotters and two electrostatic plotters are used for logging sessions and for working hard copies.

The use of CAD at Perkins allows design engineers to examine engine inlet port shapes and profiles, as well as combustion chamber configurations—that is, their volumes and shapes. The number of disciplines are closely related and designers who are fully conversant with three-dimensional capabilities are expected to work with aerodynamicists and combustion engineers who will probably be using other mainframe-based technical computing programs. Designers can make compo-

nents rotate on the screen to show engine views from various angles. Alterations to an engine part which have been made on one view of the drawing will be reflected in all other views and on all drawings of that part held in the system.

The system also performs typical CAD functions such as changing the scale of a drawing, "zooming in" for detail work or "pulling back" to give a more general view. Text and figures can be easily added or deleted as required.

## CAD NORTH



An assembly line for four cylinder engines at the Peterborough plant.

The time taken to perform routine draughting operations is drastically reduced when compared against conventional manual methods, along with the time taken to perform other routine drawing tasks such as dimensioning, producing detailed drawings from general assembly drawings, and so on.

"We were originally looking for faster production of assembly drawings," says John Brentnall, CAD supervisor at Perkins Engines. "Drawings are also used as sales aids. We expect to benefit from faster design changes. Our aim is also to make drawing much more widely available to other terminal users on the IBM mainframe by linking it to the ComputerVision system."

Where we expect the main benefit is in the faster production of drawings, for example, by storing regularly used components so that they can be inserted quickly

Sales, training, marketing and other sections of the company can be given ready access to up-to-the-minute drawings to provide illustrations for brochures, training aids, catalogues, and so on.

This facility to distribute drawings, some of which may contain sensitive design information which could be vital to the company's competition, may create security problems. But according to Frank Reader, computing manager at Perkins, mainframe users who want access to drawings from their terminals are subjected to sufficient security measures provided through IMS, IBM's database management software.

"Primary work, such as engine testing, is first carried out on various minicomputers from which data is later extracted for updating mainframe files," Reader explains. "These minis are localised, typically containing non-sensitive short term data. Otherwise there is a lot of security built in to IMS, and anyway, only 12 out of the 400 terminals hooked up to our mainframe have this CAD facility at the moment."

Perkins is a centralised, single site company. Nine CAD workstations are located in the engineering area, while the other two are in the manufacturing area, where the actual production of the engines takes place, for tasks such as jig fabrication and tool design. The host ComputerVision system is located together with the IBM mainframes in the management systems area, halfway between engineering and manufacturing.

This, according to Brentnall, provides the advantage of 24-hour operation. The other ComputerVision processor acts as a satellite to the host within the engineering

area, linked to it by means of ComputerVision's Graphics Network Architecture (GNA).

Within the engineering division, which is responsible for the design and development of new engines, CAD equipment is used for a range of design tasks. The Perkins Q14 range of engines which is due to come on to the market in the mid-1980s, was the company's first major engine project developed with the use of CAD.

The Q14 engine family will embrace three, four, five and six cylinder units, the design of which encompasses the latest in diesel engine technology. It will have significantly better fuel consumption than current engines, less noise output and will have less pollution emitted from the exhaust

"Essentially, we try to automate mundane design tasks. For example, simple components are drawn automatically by entering their dimensions in the form of alphanumeric data," says Brentnall. "Where we expect the main benefit is in the faster production of drawings, for example, by storing regularly used components so that they can be inserted quickly."

"We have been ComputerVision customers for five years now. We have also used other manufacturers like IBM for more generalised graphics for applications such as presentation of management information and of technical publications. We will eventually integrate the two systems to allow users on the CAD system to move over to the mainframe for more complicated calculations."

The use of CAD also promotes standardisation by allowing a designer to select, for example, a threaded fastener by calling up a list of standard Perkins fasteners.

The list defines not only the materials and dimensions of parts currently in use, but also the number used annually, the engine types on which they are used (taking into account whether these engines are at the beginning or end of their lifecycles), and the unit cost. The designer can thus select the part which fits the technical specification most economically.

"Looking further ahead, we have plans to move into computer-aided engineering. By using the design capabilities of CAD, we will be looking at those aspects of engine design related to combustion."

"We also want to provide the ability to run technical computing

## PREVIEW OF CAD NORTH

# CAD promotes standardisation

From page 18

programs through CAD terminals to link their results with a graphics capability, specially in field of finite element mesh generation and finite element analysis," he adds.

There are 30,000 live drawings held on file at Perkins. One of the benefits of CAD is that modifications to existing drawings can be carried out quickly and new drawings produced quickly on a Versatec electrostatic plotter. Pen plotters are also used for outline drawings or combustion chamber profiles.

Manufacturing sections will be able to use computer-generated graphics as direct input to computer-controlled machine tools. The production of numerical control (NC) tapes will allow Perkins to gradually move to a total computer-aided engineering environment, using three-dimensional CAD work for machining port shapes and combustion chambers, and integrating this with work on finite element calculations.

The use of CAD also allows Perkins to undertake profitably smaller projects because turnaround time on drawings is speeded up. The system was planned from the outset to integrate with other computer functions. Problems created by the scale of the operation at Perkins are increased by the large number of different engine specifications, each of which is tailored to match customer requirements.

This leads to complications in assembly, component supply, and so on. The Perkins system helps to keep product costs down by increasing efficiency and keeping down stock levels. The company's approach has been to integrate systems as closely as possible to allow all divisions to access data stored on the system.

The use of ASPRO ensures that all areas of the company are working from the same manufacturing plan

The system provides assistance to the sales and manufacturing operation in addition to activities such as financial control and engineering. Perkins calls this ASPRO, for Assembly PROGRAMming. Its function is to maintain an accurate, precise definition of future production in the form of a "build program".

This in turn provides the data for other systems such as material purchase scheduling, component machining, factory capacity planning, sub-assembly production and material picking from stores. The build program is constantly updated by a sales processing system.

The use of ASPRO ensures that all areas of the company are working from the same manufacturing plan and that factory loads and capacities are matched more closely.

On the materials supply side, the system automatically generates a set of proposals showing when suppliers should be instructed to make deliveries. The effect on materials stock levels can then be calculated and amendments made before printing delivery schedules to be sent to suppliers.

Perkins is currently extending the system for checking stores on the shopfloor and the amount of work-in-progress by installing a bar-code scanner which will read computer-printed labels on the bins in which components are transported around the factory. Engine tracking facilities down the assembly line are provided by

means of an engine build card containing a magnetic strip which accompanies each engine.

After each major operation is completed, the card is fed through a reader which scans the magnetic strip to report to the system the location of the engine. Terminals located throughout the factory are used by production personnel to inform the system of any faults found in an engine so that it can keep track of that engine's whereabouts.

The system also records information from the engine test cells where every engine is put through its paces before it leaves the factory. The behaviour of the engine under varying conditions of load and speed is recorded for later recall for things like quality analysis down to component level.

All reports from warranty action, service engineers, fleet monitoring etc. are entered into the computer and added to the information stored during the engine's passage through the factory. Reports are then analysed and reliability data related to particular components or to particular assembly areas.

The system also helps customers' and distributors' service personnel who can obtain the engine's full history from the system. Storing component and product data on the computer also assists manufacturing areas in deciding how to assemble engines. For each engine specification, the computer records the full parts list and the route the engine must take through the factory in order for all components to be assembled in a logical sequence.

Changes in engine designs and specifications are "expedited" to show production departments the significance of alterations, component by component. The computer then helps to calculate the correct assembly route for the new specification. Changes also affect the purchasing departments which are automatically alerted to alterations.

Perkins sales subsidiaries throughout the world are linked to the Perkins mainframe system at Peterborough. These companies enter customer orders into terminals, specifying the engines to be delivered and the week in which delivery is required up to 12 months away. The system checks orders received against factory pre-defined constraints established by the company's production control departments.

For example, the computer checks to see whether the number of orders received for a given week is within the production capacity of the factory and whether the materials needed to complete the order are in stock or can be ordered and delivered on time.

Provided that the order does not exceed any of these constraints, the sales company is instantly informed that the order is accepted and the system automatically updates the database to take account of the new order, altering the forecast materials and components requirements so that the necessary action can be taken by the purchasing department and those sections of the factory concerned with producing engine components.

If however the new order does exceed the constraints laid down in the system's program, then it is referred to the production control department for a decision. If the order can be accommodated by, for example, rearranging the planned engine building programme, the sales company is informed and the system updates the database accordingly.

The system allows online interrogation from any terminal so that all departments concerned can keep track of the situation, to establish the current state of the order book for a particular customer, the planned production of a particular engine type, total planned production for a given period, and so on.



Part of the newly installed cylinder block machining line at Perkins Engines.

## Buying to Sell?

An important conference for companies buying products to sell on to the user



The Computer Trade Conference is a vital opportunity to learn how to buy in systems, software and peripherals and sell them profitably to your market. The editorial resources of Computer Weekly, Systems International and Practical Computing have combined to stage a two day conference covering the sales of medium and small systems and products to both professional and home computer user. Ranging from mass storage to software, and from IBM to the best vertical market, the conference will run alongside the first Computer Trade Show at the International Wembley Conference Centre and be held on April 26 and 27, 1983. Make a date to share the experience of suppliers and vendors alike.

### PROGRAMME TUESDAY, APRIL 26

- 09.30 Registration and Coffee.
- 10.00 What hardware should you sell?—the amount of technology on the market is bewildering. What products and types of devices are here to stay, and more importantly, which can make money for you?
- 10.30 What software should you sell?—it is tempting to go for the established products such as CP/M, Wordstar and Visicalc. But is this the best route to success?
- 11.00 Who should you sell to?—are vertical markets the way forward, or is a more general approach to marketing called for?
- 11.30 Coffee.
- 11.45 Support—how much should you give?—are cut prices and a cash and carry attitude preferable to comprehensive user support, or is there room for both methods?
- 12.15 What a software house looks for in a dealer?—a leading software house explains its selection criteria for the organisations which will be its interface with the consumer.
- 12.45 Lunch.
- 14.00 Selling and licensing through large manufacturers—you may have a product needed by a major computer company. How should you go about convincing them?
- 14.30 Dealing with the majors 1—ICL and the Tradepoint scheme.
- 15.00 Dealing with the majors 2—IBM and its attitude to third party vendors. A rare chance to get behind the facade of this enigmatic giant.
- 15.30 Dealing with the majors 3—DEC and its authorised dealer scheme. The world leader in minicomputers talks about selling for them.
- 16.00 Close.

### WEDNESDAY, APRIL 27

- 09.30 Registration and Coffee.
- 10.00 What's new?—hardware developments—an overview of the current state of the art. Everything you ever wanted to know about micro floppies, low cost printers, Winchester and local area networks.
- 10.30 What's new?—software developments—database management, operating systems, and the latest trends in applications software are discussed.
- 11.00 Putting it together—the problems of plug incompatibility—what fits with what, and what won't. A look at putting together turnkey packages.
- 11.30 Coffee.
- 11.45 Marketing your own product—a software house case study. A behind the scenes look at how to do it right the first time.
- 12.15 Selling yourself—how to get your name known by the right type of customer. The power of advertising should be working for you.
- 12.45 Lunch.
- 14.00 Don't ignore the man in the street—a case study—home computer users are becoming more sophisticated. High volume, low cost products may be right for you.
- 14.30 Selling into business—a case study—higher unit costs appear attractive, but is the commercial user a tougher nut to crack than the home user?
- 15.00 Selling a US product in the UK—there's a vast pool of packages across the water. How, and why, you should sell them to the British consumer.
- 15.30 A future look—where will you be in a year's time.
- 16.00 Close.

and here's your invitation

REGISTRATION FORM Please complete in block capitals and send to Conference Administrator, Room 1313, Surrey House, Thornley Way, Sutton, Surrey SM1 4QQ. Tel: 01-645 8040. Ext. 4840 and 1892.

Please indicate which sessions you will be attending:  
April 26 April 27 The fee of £170 plus £25.50 VAT for two days or £90 plus £13.50 VAT for one day covers attendance, coffee, lunch and conference documentation. Tax invoice will be sent.

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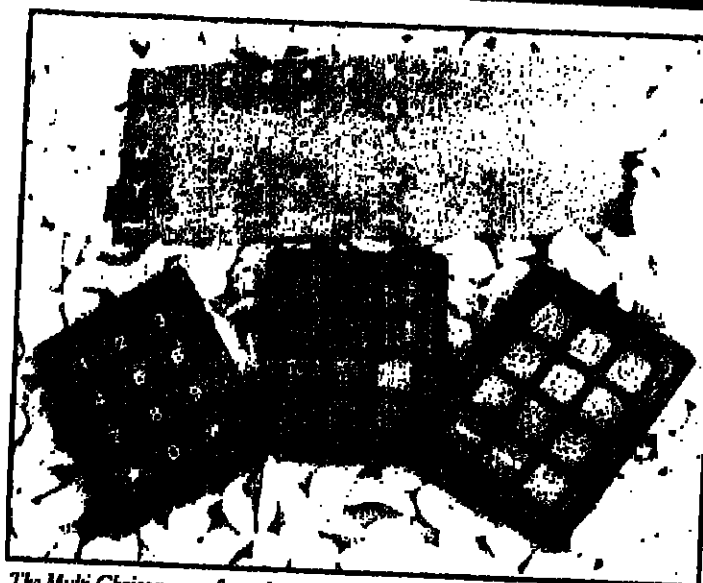
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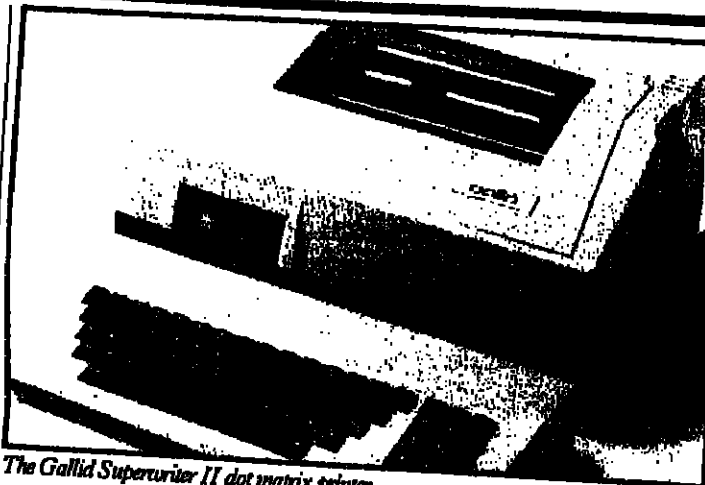
## Switch to 57 varieties

NEW FROM Flexible Switch Technology is the Multi-Choice range of membrane switch panels, offering instant delivery on a customer-selected range of legends from up to 57 different characters on 3x4, 4x4 and 5x4 switch arrays. The switch panels, which have the advantages of being fully sealed and low profile, incorporate reverse-printed graphics for durability and performance. Blue, white or red are offered as standard background colours, and the

panels are available with either flexible backing or printed-circuit mounting. FST makes no charge for tooling on custom-designed panels, and the company is aiming to despatch all deliveries within 24 hours. Unit costs for small quantities are typically £4.50 per panel. Flexible Switch Technology (CW), Unit 3, Middlefield Industrial Estate, Sunderland Road, Sandy Beds SE19 1RB. Tel: (0767) 80332.

## Fast access data storage from Encotel

HIGH capacity rapid access storage in a complete workstation is available in the form of the hard disc BMC 1800 system from Encotel, the Croydon-based microcomputer distributor. Encotel's new version of the BMC 1800 with built-in printer and full colour high resolution graphics, costs about £3,600. Made by Oki, it is fitted with a 10 Mbyte Mitsubishi Winchester disc drive and Oki's own controller. Encotel expects the new model to appeal to anyone wanting rapid access storage, particularly scientific and technical users. The BMC 1800 can be operated with a powerful range of software packages. Encotel Systems (CW), 7 Imperial Way, Croydon Airport Industrial Estate, Croydon, Surrey. Tel: 01-896 9687.



The Gallid Superwriter II dot matrix printer.

## Gallid matrix printer

A DOT matrix printer called the Superwriter II has been introduced by Gallid. It is an 80/132 column microprocessor-controlled device suitable for almost every type of computer installation, says Gallid. It can also be used as an

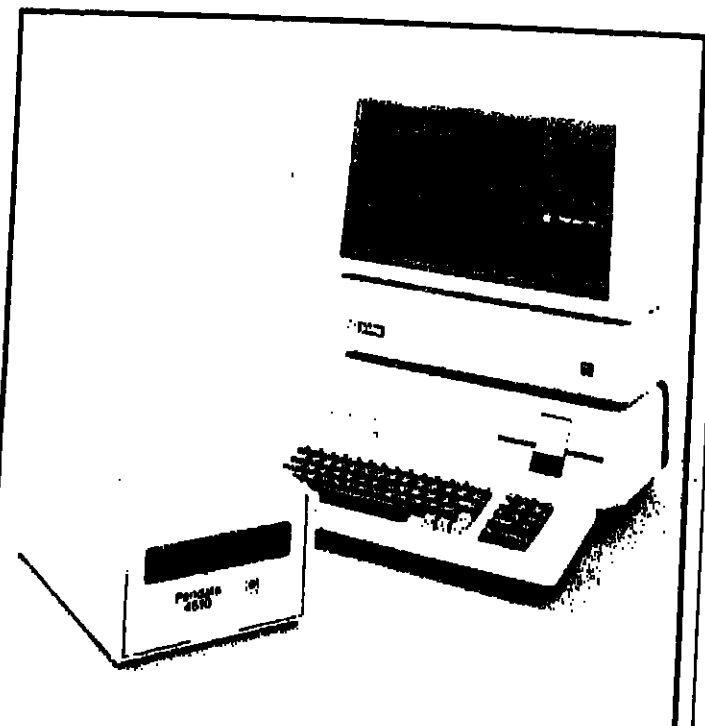
interactive second printer for any time-sharing system. The Superwriter II prints at 128 characters per second. Gallid (CW), 1 Bliton Road, Rugby, Warwickshire CV22 7AA. Tel: (0788) 744423.

## Low cost back-up for Apple III users

SINTROM Electronics has launched a low cost back-up device for Apple III users. The Sintrom 4510 has been developed specifically for the Apple III Profile Winchester disc and is claimed to offer back-up at 25% less cost than any other device on the market.

Most users of Winchester disc microcomputer systems need back-up to maintain safe archive management procedures. The Apple III user previously could transfer the five Mbytes of data to floppy discs, a lengthy and troublesome process, or could buy a very expensive streaming device. The Sintrom 4510, which was developed by Sintrom's sister company Perex, copies data for archiving purposes from any size of file to the highly reliable 3M tape cartridge. The 3M cartridge was chosen because of its wide industry acceptance as a stable and reliable medium for back-up.

The Sintrom 4510 costs £1,358 and is available direct from Sintrom in Reading or from Apple III dealers. Sintrom Electronics (CW), 14 Arkwright Road, Reading, Berkshire RG2 6LS. Tel: (0734) 975464.



The Sintrom 4510 low cost back-up for Apple III Winchester disc users.

## Data recorder unit is fully portable

MICRODATA has introduced a fully portable data recorder unit, designed primarily for collection and non-volatile storage of data from solid-state memories in data loggers and similar systems.

Called the Microdata model M1683, the new unit employs a standard 1/4-inch magnetic-tape data cartridge as the storage medium; and it records in computer-compatible Asci/Ecms serial format. It interfaces directly with the recently announced Microdata Solog all-solid-state portable data logging system.

Powered by internal rechargeable batteries, the M1683 is believed to be the only recorder of its kind to feature its degree of self-contained portability. When fully charged its batteries have sufficient capacity for the recording or play back of a complete data car-

tridge. The equipment can also operate in a float-charge mode, from any standard AC mains supply or from an external low-voltage AC or DC source.

It is supplied with either an RS232C or IEEE-488 input/output interface as selected by the customer, and it can operate under interactive computer control if desired. It is also equipped with a separate eight-bit parallel bi-directional interface, which is CMOS/TTL compatible, for connection to a microprocessor. This input/output port is employed when the recorder is used in conjunction with the Microdata Solog data logger.

The M1683 recorder is capable of storing up to 2.8 Mbytes. Microdata (CW), Monitor House, Station Road, Radlett, Herts. Tel: (09276) 3141.

## Jasmin puts colour into character generation

JASMIN Electronics has launched a TV-based information display system utilising a unique colour character generator which the company claims to be the most versatile on the market.

Information systems incorporating the new character generator are easy to use and display any information - from share prices to train times to sale offers - in the most suitable size and with a wide range of colours, says Jasmin.

A black and white version of the new character generator has already been successfully installed as part of Jasmin information systems at British Rail's Preston and Lancaster stations.

One basic system can contain up to seven different formats and the same information can be presented in different formats whilst only needing to be generated once.

Almost any format, from 11 characters on four lines to 80 characters on 25 lines can be generated.

The full range of colours can be combined in an almost unlimited variety of different lettering, backgrounds, borders, boxes, underlining and flashing characters. The system can be controlled automatically by a computer and can also be combined with public broadcast teletext and Prestel pages.

Jasmin Electronics (CW), 8 Matthews Way, Leicester LE2 2AA. Tel: (0533) 58128.

## Barcode readers

RENTAL Research has launched a range of barcode readers that will attach to all IBM systems. The readers consist of a light pen, a slot reader, and decoder unit that attaches between the keyboard and screen on an IBM workstation. Using a current loop, up to seven barcode readers may be attached to a single workstation without effect on the system configuration.

The coded information is then read on to the screen as if it were keyed data, a solution with the lowest software and hardware costs.

Rental Research (CW), 2 London Wall Buildings, London Wall, London EC2M 5PP. Tel: 01-628 0341.

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## Ambitious Programmer

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Our client is a group of companies operating across a very broad spectrum of industry. The Group presents a profitable and secure profile and one of the largest and most exciting areas of activity is in food distribution.

This division has a DEC PDP 11/70 under RSTS/E and the first major implementation is a Pricing System, the initial stages of which are currently in operation. Other major projects have already been identified, including a new Product Promotion system.

To keep pace with these new developments, the company requires an ambitious, young PROGRAMMER able to demonstrate the following skills and aptitudes:

- ★ A good knowledge of RSTS/E
- ★ At least 2 years experience of BASIC+/BASIC+2
- ★ The potential to rapidly move into Systems Analysis
- ★ Bright, reliable and able to form effective relationships with users

If you are looking for a challenge and an environment where you can make a real contribution, then our client can present the ideal opportunity.

The starting salary is up to £9,000 and additional benefits include 21 days Holiday, Subsidised Restaurant, good Pension Scheme and Discounts on Company Products. The UXBRIDGE location has ample car parking facilities and is close to all forms of Public Transport. We recommend you apply without delay quoting REF: DMJ/803.

## Hardware Systems Engineer

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A commitment to the highest standards of performance has made our client the largest and most consistently successful systems house in the UK.

The Engineering Services Area is a vital part of the operation and enjoys a substantial reputation based on experience and leading-edge expertise. Due to the increased demands on their services, the company now requires a HARDWARE SYSTEMS ENGINEER.

Your hardware background will include systems configuration, equipment selection, proposal preparation and pre/post sales support. You will almost certainly be working for a computer manufacturer in a Technical Support role with your most recent experience in the area of Data/Voice communications (the emphasis on data). A knowledge of local area networks including X25, HDLC;

SDL, SDLC would be highly desirable. The company provides an outstanding environment for ambitious professionals who want to be associated with success and recognised for achievement and effort.

The Head Office location is SURREY/HANTS borders and you should be prepared for some travel within the job. The starting salary reflects the importance of the position and additional benefits are those you would expect from an organisation of this stature, including ASSISTANCE WITH RELOCATION. Knight Recruitment highly recommends this vacancy and it is important you contact us without delay. For immediate appointments quote REF: DMJ/805.

## VAX Systems Programmer

### c£12,000 + benefits

Our client, Coca Cola Southern Bottlers, is one of the biggest manufacturers of soft drinks in the UK. The name Coca Cola is synonymous with success. Why not become part of this formula and join their newly created Technical Support team.

The company has made a significant investment in distributive systems with central processing facilities based on new DEC VAX hardware. The communications network extends countrywide and the current development programme is fundamental to the efficient control of what is a high volume and fast-moving business.

Providing technical support is a vital function and as such the organisation intend recruiting a talented and ambitious Systems Programmer able to demonstrate the following skills:

- ★ A minimum of 2 years VAX experience
- ★ Fully conversant with VMS and associated utilities
- ★ Able to perform a systems generation

★ Experience of resource management (ie disc space allocation/user a/c's etc)

★ A knowledge of telecommunications a distinct advantage

In addition you will be communicative and able to establish cooperative relationships with all levels of user. It is also anticipated that you will play an important role in the support of distributive systems.

As we have mentioned, the company are building a new team and can therefore provide outstanding career prospects. The starting salary is highly competitive and the usual large company benefits, including Relocation Assistance and BUPA, will apply. To find out more about this exciting opportunity and to arrange immediate interview contact REF: DMJ/804 without delay.



## Hardware Consultant

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Our client, a leading UK Systems House with a highly impressive growth record, comprises a number of operating divisions.

We are currently recruiting for the Defence and Special Systems Division and to keep pace with the demands on their services, they wish to appoint an additional Hardware Consultant. This position is fundamental within the total project development cycle and only candidates with the presence and strength of character associated with a dedicated professional are required.

Within a project environment, you will be responsible for monitoring the hardware development process to indicate systems and hardware design and testing. Further, you will be expected to maintain sound relationships with senior customer management.

In addition to a degree or equivalent you will have a thorough background in digital hardware development, preferably with

some knowledge of equipment design in a military environment.

Salary and benefits are commensurate for this level of appointment within a company of this stature, and includes Assistance with Relocation.

This is an outstanding opportunity and we recommend you apply without delay quoting REF: DMJ/806.

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Other features in this issue include: First Bytes, each month covering a different aspect of Basic - most popular computer language - for beginners; Language Learning, how to learn a foreign language with a micro; Spectrum Word Processor, in which we take the hassle out of typing. Thousands of home computer owners are finding that computers can be fun with the aid of Your Computer. Order a regular copy and find out for yourself.

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COPICS CICS DL/I. Req. Definition, syst. design/maintenance, project management and user education +++ Small professional Co. Ref: P185

**PAYROLL ANALYST** to £13,500 + Car  
UNIPAY ± IBM Utilities. Ref: P186

**PROGRAMMER** Salary Neg.  
1 Year min. CICS/DL/I ± RAMIS exp. Various commercial applications. Ref: P187

**ANALYST** c. £12,000  
Technical background including CICS design and VSAM. Accounts receivable system. Ref: P188

**BUSINESS ANALYST BERKSHIRE** Salary Neg.  
Strong accounts background. To work on large invoicing system. Good benefits. Ref: P189

**FINANCIAL ANALYST HOME COUNTIES** c. £13,000  
MSA/MMS/RTZ To advise users and tailor packages to local requirements. Some travel involved. Ref: P190

**ANALYSTS BERKSHIRE** Salary Neg. + benefits  
Market analysis forecasting and statistical support exp. req. Ref: P191

## CONTRACT

Our current requirements are constantly being up-dated, these are the most urgent!

**SYSTEMS PROGRAMMER MIDDLESEX**  
4341 MVS JES2 ASSEMBLER. Ref: 0078

**SOFTWARE ENGINEERS BEDFORDSHIRE**  
Micro oriented software development using PLM86 and Assembler. Ref: 0077

**SYSTEMS PROGRAMMER SURREY**  
IBM VM/CMS ASSEMBLER ± OS/VS11 MVS JCL TSO/SPF COBOL. Ref: 0071

**ANALYST/PROGRAMMER LONDON**  
EXTTEL/EXSHARE DOS/VSE COBOL. Ref: 0069

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# An outstanding career opportunity in computer operations Computer Operations Manager

Location: Central London  
Salary: Circa £15,000 p.a. plus benefits which could include company car for an exceptional applicant

Our client is a very successful British company. Their use of computing has grown dramatically over the past two to three years, and they now wish to appoint a Computer Operations Manager to play an important role in this continuing development. The range of equipment used is considerable. It includes Prime and ICL hardware and a considerable number of micros and word processing equipment.

Our client is looking for someone who has a strong technical background in the operations sense. Ideally a knowledge of CAD would be an asset, but this is not essential. More important is the ability to match the growing expectations of existing company management. Creativity and innovation will need to be part of daily life, and the ability to assist user management properly in the development of the systems from the operational point of view is paramount.

However, controlling the installation, which is totally interactive, on a day-to-day basis is certainly not the total job. Forward planning in terms of new hardware, the ability to cope with the development of new operational systems and the

control of people in a growing computer installation form an important part of the total responsibility necessary to make a success of this position.

Before you apply consider the following points:

Have you worked in a senior position in an interactive installation? If the answer is no then on this occasion you are not the right candidate.

Do you have experience of controlling staff and dealing with users over a period of at least five years, and would you be able to prove this at an interview?

Have you experience of predicting future hardware demands in line with your understanding of computer user requirements?

Have you worked in a position where the only person to fall back on is yourself?

Are you in the age range of 28 to 35, ambitious, keen to get ahead in a rapidly developing computer environment?

If the answer is yes to these questions then we would like to hear from you. Please send your curriculum vitae to JVG Recruitment Ltd.

## RECRUITMENT LTD.

Seamy House, Pringle Road, Camberley, Surrey, England.  
Tel: Camberley (0276) 29213. (24-hour answering service). Telex: 858386.

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JOHN GOLDSMITH

# Sales Director Designate Microcomputers Original Computer Applications

Package in excess  
of £25,000 per annum  
+ Quality Car

Midlands/Home Counties

Our Client, part of a profitable public group of Companies, operates at the forefront of modern microprocessor and micro electronic technology. They have invested substantially in the development of a REMARKABLE product which since its launch has achieved considerable success, and generated significant orders within major accounts in the public, defence and private sectors.

Continued growth and success has created this key appointment of Sales Manager (Director designate) to control the Company's sales activities and supervise distributors and agents.

Responsibilities will include managing, motivating and training the sales team as well as spearheading the sales effort in major accounts. Working closely with the Managing Director you will be involved in developing the marketing policies of the Company.

You will probably be aged between 28 and 40 and have a successful track record within the computer industry which should include practical experience of microcomputer applications and inter computer communications. You will need to have a creative approach to selling and a problem solving mentality, combined with a determination to achieve business objectives.

The successful applicant will enjoy a salary of circa £15,000 per annum, plus a 2 Litre Company Car and other benefits. The incentive scheme in operation will take your earnings in excess of £25,000 per annum and an early promotion to the Board is envisaged for the successful candidate.

For further information contact DAVID WADE on 021-236 3781 (24 hour answering service) or on 0785 660051 (Evenings and Weekends).

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd

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James House, 40 James Street  
London W1M 5HS  
01-236 3781/236 0461

MIDLANDS & INTERNATIONAL  
35-37 Great Charles Street  
Birmingham B3 3TV  
01-236 3781

NORTH  
International House, 84 Deansgate  
Manchester M3 2ER  
01-633 0457

BELGIUM  
Avenue Louise 327  
B-1050 Brussels  
010 322-840 7181/771

HOLLAND  
Willemspleinweg 92  
1071 HJ, M. Amsterdam  
010 3120-75047

# DEFENCE at Scicon

Defence has a continuing requirement for higher performance weapons, a requirement that keeps defence procurement agencies to the fore in developing and applying new technology. The technical excellence and flexibility of Scicon's approach has gained them a reputation second to none for sophisticated yet cost effective solutions to defence sector problems.

Career opportunities are excellent, leading to consultancy and project management, with emphasis put on training. We would like to hear from you if you identify with any of the following positions:

## BUSINESS DEVELOPMENT MANAGER

£15,000-£17,000 + car

You will need to have about 10 years experience for this demanding role, of which the last 3-4 years should have been in a "command, control and communications" environment. You must have a combination of technical excellence, management ability and the right interpersonal skills for handling clients at a senior level.

## SENIOR DESIGN CONSULTANTS

£12,500-£15,000  
You will have about 6-8 years experience, with a track record for the design of real-time command, control and communications systems, and a real-time programming background in ADA, CORAL or MASCOT.

## CORAL or MASCOT ANALYST/PROGRAMMERS

£8,000-£11,000

Real-time micro experience in a command and control

environment is required. Experience with INTEL, VAX or GEC 4000 hardware is an advantage.

## SIMULATION AND MODELLING ANALYST/ PROGRAMMERS

£8,000-£11,000

The ability to carry out innovative studies in a small team is required. It is likely you'll have a good degree in a numerate discipline, scientific programming experience (FORTRAN, PASCAL) and considerable career potential.

## DEFENCE INFORMATION SYSTEMS CONSULTANTS AND ANALYST/ PROGRAMMERS

£8,000-£13,000

You should have experience in the design and implementation of materials handling, stock control, and other defence logistics systems based upon DEC PDP and VAX equipment using a variety of packages with FORTRAN and COBOL.

For further information on any of these positions, please contact MARK IRENS quoting reference CW 0302.

HUTTON EXECUTIVE SELECTION LTD.  
HUTTON HOUSE,  
HUTTON STREET, LONDON EC4Y 8HP.

TELEPHONE: 01-353 7141 (24HOURS)

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Superb hardware and operating systems, together with the "credibility" of an established and successful name are important to any sales situation. Add to this sophisticated marketing and an excellent range of packaged and bespoke applications software and one has all the ingredients of highly successful selling - all we need is your expertise!

Broadly, our Clients need people with at least five years' successful selling in any of the areas outlined above. Experience of the larger minis or mainframes is preferred, but above all, candidates should have a "systems solutions" approach to selling.

Please telephone BOB BOWER - Advising Director quoting reference CW 2402

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HUTTON HOUSE,  
HUTTON STREET, LONDON EC4Y 8HR

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**Hutton**  
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# SYSTEMS ENGINEERS

**IBM, BATCH, ON-LINE, DATABASE  
MAIDENHEAD, BERKSHIRE  
£10,000-£15,000 + CAR**

MSA (Management Science America) Ltd., the world's leading supplier of packaged application software, seeks Systems Engineers to provide full technical support to customers and application consultants.

We are looking for Data Processing professionals with experience in any of the following: BAL and/or COBOL, CICS, VSAM, IMS DB/DC, and technical problem solving in DOS/VSE, OS or MVS environments.

This is an opportunity to build on your expertise in the above areas and gain experience of the very latest trends in IBM technology.

Mainframe/Micro link and exploitation of IBM's new SXX operating system rate highly on MSA's priority list for technological advancement during 1983.

You will receive constant training to keep you abreast of current technological developments and will benefit from the variety involved, both of work content and IBM systems. Opportunities exist for short trips to the U.S.A. and Europe.

Fringe benefits are excellent and include a quality car, annual bonus, BUPA and good pension scheme.

For further information, please contact MARK IRENS quoting reference DL2401.

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# Computer Peripherals Distributor Manager

**W. Europe  
Quota Package  
C. £22K + Car + BUPA**

Cipher Data Products are the world's largest manufacturer of low cost tape drives and are leading innovators in streaming technology. Our continuing high growth rate dictates further expansion.

We need an ambitious manager to develop additional distribution channels in Western Europe for a range of new products about to be launched.

The person we want will probably be aged between 25 and 35 and have a sales background in microcomputers and/or micro related peripherals such as floppy disk. Self-motivation, the ability to negotiate at all levels and the confidence to work remotely from head office, are all essential qualities for this job.

The position is based at our European HQ at Camberley, Surrey UK, reporting to the Managing Director.

If you believe you have the qualities we need, send a v.c. to M. A. Brown, Managing Director at:

**Cipher**  
Camberley House, Surrey Avenue, Camberley, Surrey,  
GU15 3DX, England.

# Information Processing Manager (Banking)

**Nairobi, Kenya Two-year contract  
Home leave after one year**

Reporting to senior Management, the successful candidate will be responsible for all aspects of information processing and computing.

The post calls for an experienced professional with outstanding qualifications in information processing, banking experience is essential. The computer equipment includes an IBM 4381 and an IBM 29 which together service the requirements of some 50 branches employing 2,600 people.

Strong personal qualities will include initiative, management skills and capability to identify and train a possible successor within a limited time frame. Preferred age is 30-45, single or married status. Salary will be negotiable within the range of £25,000-£35,000 per year; a car will be provided, together with accommodation and other fringe benefits.

Please apply in writing, quoting experience and full personal history, to: Box No. 1248, Computer Weekly, Room 209, Quadrant House, The Quadrant, Sutton, Surrey.

All replies will be treated with strict confidence.

# BOX NUMBERS

Box number replies should be addressed to:

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c/o Computer Weekly  
Quadrant House, The Quadrant  
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# Senior Sales Executives

**Banking Systems**

**Bahrain Based £30,000+ (tax free)**

ARBAT

Bahrain is a stable and progressive State with - for the greater part of the year - a pleasant maritime climate. Social conditions are excellent and free from irksome restrictions. A major Gulf trading centre, it has a growing range of industries, the foremost of these being banking and finance.

ARBAT "The Banking Systems People" offer a complete range of banking and telecommunications computing capabilities based on the latest Digital Equipment Corporation (DEC) technology and are recognised as being the world leader in their field.

For these two key appointments good banking experience is essential. In addition, you should either be able to prove a successful track record in sales of major systems (hardware and/or software) to banks or have a background in the operational or marketing functions of banking itself, with a good understanding of computers.

The terms and conditions of employment are excellent, providing the best aspects of a top level sales appointment and expatriate status (married or single), enabling you to enjoy a very high standard of living and the opportunity for substantial accumulation of capital.

In addition to a basic salary (tax free) of c. £18,000, you will be provided with housing, utilities, a car, medical facilities and full cover, four weeks' holiday and one return air ticket home per annum.

To apply please write to M. J. R. Chapman, quoting reference 6232.

**Lloyd Chapman  
Associates**  
125 New Bond Street, London WY1H 0HR 01-499 7761

**Logitix** Logitix Recruitment Limited  
10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

# Defence Systems Software

Netherlands : Pkg to £18K

The Defence Group of a multi-national corporation urgently requires a number of Senior Programmers/Team Leaders, to join both the Application and Systems Team currently employed at its Development Department. Experience should have been gained in a real-time environment over a period of 7-10 years. Specific application areas of interest are likely to include one or more of Command and Control, Process Control, Data Communications or Weapons

Guidance Systems. At the Systems level, suitable applicants should be fluent in RTI/2, Pascal or Coral 66 and, preferably, have participated in the development of at least one compiler. Additional knowledge of ADA and exposure to a MASCO environment will attract a salary premium. All positions are on a permanent basis and full relocation expenses will be met by our clients. Ref: LWA

# VAX/FORTRAN Programmers

Inner/Greater London : Salaries to £11K

An International Systems Company specialising in the development and marketing of communications software is seeking additional Programmers and Designers for its London headquarters. Candidates aged 22-27 years should hold a numerate degree and have a minimum of twelve months FORTRAN programming experience preferably gained in a PDP-11 or VAX

environment. Application areas of interest include Office Automation, Visualaid and Preset. Data Communications and Distributed Processing. Since these positions entail a high degree of client liaison, you should possess excellent personal communication skills and be prepared to travel both nationally and internationally. Ref: LWB

# Software Development

Cambridge : Salaries to £12.5K

The Cambridge based Research and Development facility of a rapidly expanding Micro Systems Supplier is currently seeking additional Programmers and Communications Design Engineers. Applicants for the positions of Programmer should offer a first or second class honours degree in a numerate subject and at least eighteen months subsequent experience in a micro based software development environment.

Fluency in a high-level block structured language is essential but applicants who can also offer experience in compiler writing/development will be of particular interest. For the positions of Communications Design Engineers you should offer an in-depth knowledge of Local Area Networks and applicants who are acquainted with the Cambridge Ring Design philosophy will attract a salary premium. Ref: LWB

# 'C' and Pascal Programmers

Central London : Salaries to £10K

One of the U.K.'s leading suppliers of micro-hardware and communications oriented software is currently seeking a number of 'C' and PASCAL Programmers to assist in the development of both applications and systems software. All respondents should hold a first or second class honours degree in Computer Science, Electronics or Mathematics. Those who have completed a sandwich course and can offer

a minimum of six months' programming experience with a commercial organisation are encouraged to apply. Ideally, you should have current programming experience in 'C' or PASCAL under UNIX, CP-M or MP-M on any leading 16- or 32-bit processor. Of additional interest are those who have some knowledge of communications protocol techniques - X25 and COBOL. Ref: LWB

# Video Games Software

London & Home Counties : Salaries to £9K

Programmers who have developed Systems Software on any of the leading Personal Computers are urgently required by a number of our clients. Language skills should include BASIC and Assembly with fluency in Pascal or 'C' being a very useful supplement. Specific responsibilities will include not only the development of new games

software but also evaluating programs, sent in on a speculative basis by outside contractors, for any software bugs and commercial viability. These positions are most likely to appeal to recent graduates with a lively interest in the Home Computing market. Ref: LWB

# Comms Consultants

Inner London : Salary to £18K

A London based Systems House and Consulting firm is seeking several Data Communications and Network Consultants. Ideally, all candidates should be educated to at least B.Sc. standard and have subsequent relevant work experience amounting to at least five years. Of particular interest will be those who have an in-depth knowledge of communications protocol techniques - X25, SDLC/HDLCL. Since these

positions will entail a high degree of customer contact at director and senior management levels, good personal presentation skills are invaluable. You will be called upon to provide a total consultancy service from the strategic study aspect through to written recommendations, on-site implementation and customer acceptance. Ref: LWB

# Compiler Development

London & Home Counties : Salaries to £14K

A major Systems and Software House has recently embarked on a large new project requiring the expertise of a number of Compiler Development Specialists. Suitable candidates will have participated in the development of either a Pascal or Ada compiler preferably for 16-bit micros. Familiarity with all phases of compiler

development is strongly desirable with particular emphasis placed on Code Generation and optimisation. The nature of the project will vary, depending on the ability and experience offered, all successful candidates will be involved from initial proposal stages through to the creation of a fully self-supporting compiler. Ref: LWB

# Operational Analysts

London : Salary to £13.5K

A number of Operational Analysts are required by this London based Consultancy. Academically, you should hold at least a first or second class B.Sc. Degree in Mathematics, Physics or Statistics. An M.Sc. or Ph.D. in Operational Research is a distinct advantage and will certainly result in the salary offered. There will also be a degree of travel to client sites. Ref: LWB

areas - war gaming and scenario studies, mathematical programming and analytical modelling, navigation systems assessments, reliability studies and data reduction. An important feature of these positions is the ability to communicate software and O.R. techniques to non-technically minded personnel. There will also be a degree of travel to client sites. Ref: LWB

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# Armstrong

**SYSTEMS ANALYSTS  
Attractive package**

Armstrong World Industries is an international manufacturing organisation with a computer centre supporting a network of locations throughout the UK. In response to future needs, the company is planning a major systems development programme utilising the latest information systems technology. This will involve substantial redevelopment of all systems and to meet this challenge the company requires experienced Systems Analysts to assume a leading role. Hardware is based on an IBM 4331 running under DOS/VSE utilising CICS and candidates should have on-line development experience (preferably CICS and/or Mantis) and ideally, a working knowledge of Cobol. An understanding of business practices and procedures, good communication skills and the ability to lead a project from feasibility to implementation are essential requirements. In return Armstrong offer highly competitive salaries, a comprehensive benefits package and an opportunity to develop your career in a stimulating environment.

LOCATION: WEST MIDDLESEX

JA816/1

**KCB  
MICROS LIMITED**

**SALES  
EXECUTIVES  
from £15,000 + CAR**

Since the company's formation in 1980, KGB Micros Limited have seen a dramatic growth in their sales of microcomputers and associated software and peripherals. An increasing demand exists for the company's products and to meet this, KGB wish to recruit creative and adaptable Sales Executives. Applications are invited from self motivated sales professionals with a proven track record of selling technical products into a highly competitive commercial environment. Experience will ideally have been gained in word-processing, bureau or mini-computer sales. The successful candidates will be required to promote the company and its product range at all levels which will include identifying and gaining new business, selling to the existing customer base and attending conferences, exhibitions and seminars. KGB will offer the successful candidates an attractive package which will include a high basic salary, company car and realistic targets which will produce a first year income of not less than £15,000.

JA816/2

**dp**

Confidential Reply

**SOFTWARE ENGINEERS  
SOFTWARE  
PROGRAMMERS  
to £9,500**

Our client has a world wide reputation for designing, building and installing integrated software and engineering systems. They provide a total solution, which means high technology software installed complete and fully supported. Opportunities have arisen for Software Engineers and Software Programmers to work on display and data handling systems for advanced technical applications. Software Engineers should have about four years' experience which will include programming systems design and implementation in a senior role in a multi-micro environment. Experience of real time applications would be preferable. Software Programmers should have about two years' experience including Assembly or similar, program specification and design in a multi-micro environment. Systems appreciation would be an advantage. The company is based within easy reach of London. Housing is available at reasonable prices and benefits include flexible working hours, relocation, five weeks holiday and outstanding sports and social facilities.

LOCATION: ESSEX

JA816/3

**TR**

**PROGRAMMER  
£9,000**

Trebor Limited are a household name in the manufacture and wholesale of confectionery and related products. Recent expansion has created a vacancy in the head office based computer services department. The company wish to recruit a Programmer with at least two years' experience gained in a commercial environment, preferably IBM, using Cobol. The hardware is based on an IBM 4341 running under DOS/VSE and VME utilising CICS and DL/I. In addition the company supports Burroughs B8000 at their head office and UK network of distribution depots. Although not essential, previous experience with IBM AS/400 series mainframes with a knowledge of CICS and DL/I is preferred. As part of a successful organisation the department offers excellent opportunities for career progression, competitive salary and attractive conditions with a benefits package which includes a pension scheme, subsidised restaurant and annual profit share.

LOCATION: ESSEX

JA816/4

**Action..**

ring or send the coupon to  
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**HOWARD**

# European Opportunities

**Belgium £25-29K**

VAX, PL/I Programmers  
minimum 4 years experience  
VAX, PL/I Programmers  
relational data base experience  
VAX, PL/I Software Designers  
relational data base experience

Please contact in the first instance, Sally Lawrence on 01-853 8892 (office hours) or on 01-853 8617 between 8-10pm.

**Luxembourg £20K**

ICL 2900 COBOL/VME-B Programmers  
PL/I (French competence)  
ICL 2900 FORTRAN Programmers  
PL/I/ALP/IBM (TSO advantage)

Howard Organisation International Limited, Russell House, 140 High Street, Exeter, Devon, EX4 7BS



## PERSONAL COMPUTING

c. £10,000 negotiable according to experience

### Office Automation Specialist

- Ground floor opportunity
- Equipment sizing, selection, evaluation etc.
- Challenging and enterprising environment

You will have had at least five years in a systems development role and seen projects through from inception to successful working order. Your experience range must include several of the following areas:

micro computing, office automation techniques (such as word processing and electronic mail), viewdata, timesharing and telephone/data communication networks.

## COMPUTER CENTRE

c. £8,500 + shift premium

### Shift Leader

- Staff supervision
- Control three Data General computers (MV8000, M600, Nova)
- Help run a diverse range of "on-line" systems

You will already have at least four years' operations experience including staff supervision and some exposure to programming. Knowledge of Data General hardware and systems is essential.

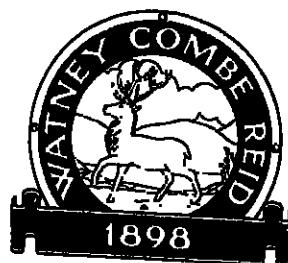
## NETWORK SUPPORT

c. £10,000

### Technical Operations Analyst

- Manage and develop a network
- Multi-machine environment
- System design
- 60 + Distributed Terminals

You will have had the necessary experience to ensure that the computer centre is able to provide the required level of service to many users throughout our offices and depots. You should have worked with Data General computers in a large "on-line" environment and have a solid operations background. Two years' programming experience is required. The job also involves working with the Systems Team in sizing and design of new applications.



**Watney Combe Reid & Co. Limited,**  
Mortlake, London SW14.

We are the largest regional company within Watney Mann and Truman Brewers Ltd., which itself forms a major part of Grand Metropolitan Plc. We provide the benefits you would expect from a large company both in remuneration and in career development opportunities.

Phone Hilary Bishop on 01-876 3434, ext. 330,  
for more details and an application form.

## Young IBM Programmers

Career Opportunities in

# Management Consultancy

to £13,000

London Based  
European Travel

One of the World's top management consultancies seeks Junior Consultants to join high-powered project teams working on assignments throughout the Government, Industrial, Commercial and Financial Sectors.

You will be involved in:

- ★ The design, development and implementation of complex systems;
- ★ Computer policy planning, equipment selection and installation;
- ★ Feasibility studies and computer efficiency reviews;
- ★ DP organization studies and procedures development.

Ideally you will possess a sound academic background (preferably degree level) and will have gained 2-4 years' experience of Commercial Programming. Strength of personality and communicative ability will be important factors.

Training the first order - In addition to the Company's own in-depth training in Business and Management methods, considerable use is made of external courses in advanced computer techniques.

Prospects are excellent - successful candidates will be expected to progress rapidly into senior DP consultancy positions, with opportunities to diversify into other fields of business.

OTHER BENEFITS include frequent salary reviews on merit, generous travel and accommodation expenses, subsidised BUPA.

If you are seeking a career path that could take you right to the top, please telephone or write quoting Ref CW 2988.

**Lloyd Chapman Associates**

125, New Bond Street, London W1Y 0HR. 01-489 7761

## Software Engineering

Somerset up to £14k

Plessey Marine Research Unit at Templecombe in Somerset is at the centre of advanced sonar technology, and is looking for high calibre, degree-qualified people - preferably in electronics or computer science - to share in the technical leadership of its teams engaged in the rapidly expanding field of Marine Electronic Systems.

The projects are in distributed processing, specialised hardware control, micro-processor aided displays, and signal processing. Opportunities exist for all levels of experience and aptitude:

**Systems Analysts** able to lay down the framework of a multi-processor design from customer requirements, and to communicate and control these designs during implementation.

**Software Systems Designers** able to develop the detailed software design concepts and lead technically a team of implementation programmers.

Programmers wishing to develop their existing programming abilities and level of design responsibility.

Software is developed using a Host-Target approach. The host computers are DEC PDP11 and VAX machines, supporting INTEL 8086 and T1 9800 microprocessors. Languages used are CORAL 66, PASCAL, and ASSEMBLER, which are normally used in conjunction with a highly developed MASCOT design and implementation methodology.

Salaries will be in a range up to £14k. Big company benefits include help with relocation to our attractive part of the West Country, within easy reach of the South Coast and enjoying the advantages of reasonably priced housing in surrounding country towns and villages.

Please ring Peter Whitfield, Technical Resourcing Manager on Templecombe (0883) 70551 for an application form, or send a full cv to him at Plessey Marine Research Unit, Wilkinstroop House, Templecombe, Somerset BA8 0DH. Please quote reference TEM/238.



**PLESSEY**  
electronic systems

(12028)

## Opportunities in the Systems Development Group for

### PROGRAMMERS

Central London up to £9,450

We need experienced staff with a minimum of two years' COBOL experience to work in an IBM environment on a wide range of development projects.

We are developing computer-based systems covering the whole sphere of London Transport's activities, ranging from the day-to-day operation and maintenance of buses and trains to the various support functions which are essential in providing an extensive transport service.

This requires an expanding range of modern computers, which currently includes IBM 3033, 3031AP and 4341s operating under MVS, an extensive and growing communications network based on IBM's SNA and distributed processing using IBM 8100 DPPX machines.

There are opportunities to work on extensive real-time and on-line systems, involving distributed processing and database development. These are interesting, challenging jobs with excellent promotion prospects, and among our fringe benefits we offer FREE TRAVEL on all London Transport services and generous travel concessions on British Rail for you and your family.

If you have at least two years' COBOL experience and a working knowledge of at least one of the following:

- IBM OS/VS1 or MVS
  - CICS and/or DL/I
  - Jackson Structured Programming (any environment)
  - IBM 8100 DPPX systems
- then please send FULL career details, in confidence, including length of experience with particular machines/ software and current salary to Audrey White, Central Personnel, 56 Broadway, London SW1H 0BD or if you prefer, phone for an application form on 01-227 3853.

## LONDON TRANSPORT

Applications, quoting ref. CDV 600 should arrive not later than Monday 14th March as we intend to hold interviews by 28th March 1983.

(12030)

# WANG

Wang Laboratories (Irl.) b.v., is the European headquarters for the manufacture of Wang products. Our rapid growth has resulted in the need to expand our Limerick based manufacturing and distribution facility to 320,000 sq. ft. over the coming two years.

We are extensively utilising our advanced data processing, word processing and office automation systems... while Wang's communications network, using our electronic mail system, has been developed for use internally as well as to Wang offices in Europe and the U.S.

To complement our M.I.S. team in implementing and integrating systems into an advanced resource sharing network, we are currently seeking the following key personnel:-

### COMPUTER SYSTEMS/OPERATIONS MANAGER

Reporting directly to our M.I.S. Manager, the brief for this challenging position will be to manage efficiently the entire computer operations area... with staff responsibility for operations analysts and operators. This is to ensure that service to user departments is maintained at a very high level.

Candidates will be professionally qualified in an M.I.S. related discipline and will possess the direct systems and programming experience necessary to operate in a commercial on-line environment.

The successful applicant will also demonstrate initiative and ability in introducing the latest hardware and operating systems and in implementing networking and operations/applications programming.

When applying, please quote Ref: OM/CSL.

### SYSTEMS ANALYSTS

As active members of our M.I.S. team, the primary responsibilities of these positions will include designing and implementing integrated systems... together with assisting users to obtain maximum return from our comprehensive range of applications.

Candidates - with substantial experience in commercial on-line systems - will have a good background in systems analysis and/or extensive technical expertise.

Excellent communications skills together with the initiative and ability to apply the latest technology in a business orientated environment will also be pre-requisites.

It is expected that candidates who will be professionally qualified in a related discipline, will have a proven record in at least one major project.

The areas of application for successful candidates will include manufacturing, materials M.R.P., engineering, telecommunications, networking, quality control, finance, personnel, order processing and office automation.

When applying, please quote Ref: SA/I.

For both positions, Income Package and conditions of employment - which will include full relocation expenses where applicable - will be very attractive and calculated to interest only high calibre applicants.

If you meet our requirements in terms of experience, qualifications and potential and you wish to contribute positively to one of the world's more progressive companies, please write, giving full career details and quoting relevant reference to:

Richard Kennedy,  
Recruitment Manager,  
WANG LABORATORIES IRELAND b.v.  
Castletroy, Limerick.

All applications will be treated in confidence.

## Making your world more productive.

(12029)

### ROBERT GORDON'S INSTITUTE OF TECHNOLOGY, ABERDEEN

School of Mathematics  
COMPUTER STUDIES

SENIOR LECTURERS (two posts), to develop CNA degree course in Computer Studies/Computer Science with experience in supervision of a systems design and implementation project and/or extensive academic/practical experience in topics relating to software engineering, real time and expert systems. Developments envisaged will follow a strong technological bias with particular emphasis on practical aspects.

Good Honours degree in Computer Science/Computer Studies or allied discipline, or considerable industrial experience required.

Salary range: £11,700-£14,748 per annum.

LECTURER to teach programming, use of software packages and microcomputer systems to a wide range of courses. Interest in operating systems and/or graphics encouraged.

Good Honours degree in Computer Studies/Computer Science required.

Salary range: £7,956-£12,581 per annum.

Assistance with removal expenses.

Details from Secretary, Robert Gordon's Institute of Technology, Schoolhill, Aberdeen AB9 1FH. (0224 633611).

(12040)



### CITY OF NORWICH

### NORWICH INFORMATION TECHNOLOGY CENTRE

## MANAGER

A 30-place Centre to give training and work experience in micro electronics and information technology to young people, and to be a focal point in the local community for support and development of new enterprises, is being set up by Norwich Information Technology Centre Limited supported by the Department of Industry and the Manpower Services Commission.

We are looking for an enthusiastic Manager with a relevant technical background, and a strong commitment to the needs of young people. The Manager will be required to set up and run the Centre and to take the lead in developing its role as a focus for the redevelopment of micro-technology in the Norwich area. The Centre will have a further five full-time staff.

An initial contract of three years is envisaged with a salary in the region of £12,000 to £14,000.

Further details and an application form are available from the Director of Administration, The City Council of Norwich, City Hall, Norwich NR2 1NR. (Please ask for Mr C. S. Brown. Tel. 22255 Ext. 685.)

Applications are welcomed regardless of marital status, sex, race or disability where this will not prevent the applicant from fulfilling the duties of the post. Closing date 10th March, 1983.

(12041)



# Software Specialists

## Cambridge or Sheffield

GST is a professional systems company with offices in the Cambridge area - a new office is planned in Sheffield in April this year. The Company is structured into Software Services, Hardware Distribution and R & D and has specialised in systems software and the technical application of computers. Its reputation for quality has been gained by recruiting only the best technical staff and by its uncompromising internal quality assurance standards and methods.

With the 1983 planned expansion additional vacancies are immediately available. If your experience is not ideal for these specified vacancies there will be more openings later in the year, but we would welcome you registering your interest now.

### Automation Systems Designer

£9,500 to £11,000 + car

A systems designer with at least six years' experience of the application of computer systems in manufacturing industries. Mini or micro based experience is essential but experience of DEC and implementation of turnkey systems in a process and production control industry and in providing consultancy to our current client base.

### Operating Systems Specialist

£10,000 to £12,000 + car

A highly competent systems specialist with at least six years' experience in the design and development of operating systems, executives or language systems primarily for mini or micro systems. Experience on Motorola 68000 or DEC equipment would be an advantage. The successful applicant will be involved in major software development projects in the role of systems designer or architect.

### Technical Programmers

£7,000 to £9,000 + car

Self-motivated programmers are required to join teams working in CAD/CAM, real-time systems or microprocessor applications. A minimum of two years' experience is required, one of which should have been spent using FORTRAN, PASCAL or ASSEMBLER. Successful applicants will be involved in a wide variety of interesting and challenging projects eg: Image analysis, 3D modelling, micro based instrumentation. These positions offer excellent prospects for advancement.

### Analyst/Programmer COBOL

£7,000 to £9,000 + car

A programmer is urgently required to join a small project team working on a major distributed system using multiple linked micros. At least three years' programming experience is essential including two years' COBOL, preferably CIS and experience of production control or related DP applications would be an advantage. The position offers an opportunity to gain experience in interactive multi-user systems based on local area networks.

### Hardware Sales

£10,000 base + car + commission

With a proven track record in selling, preferably micro based systems for technical applications, your background should include technical expertise as you will be responsible for generating sales to selective clients. GST provide full back-up and support as well as a wide range of proven software packages and products. This position offers excellent promotion prospects for the successful candidate.

For further details please contact Jenny Dalrymple-Hay or Ian Murray West (day 8 a.m. to 10 p.m.) 01-493 2947 or weekends respectively Beaconsfield (04946) 4579, Milton Keynes (0908) 563415, quoting ref. 9956.

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### BEDFORD COLLEGE OF FURTHER EDUCATION

#### APPLICATIONS PROGRAMMER FOR COMPUTER CENTRE

The person appointed should have previous experience in one or more high level languages, and will be responsible for the provision, development and maintenance of information on computer application packages.

Salary Scale AP4 £6,873 to £7,545 per annum.

Application forms and further particulars available from the Senior Administrative Officer, Bedford College of Higher Education, Cauldwell Street, Bedford. Tel. Bedford 48151 ext. 230.

## PROGRAMMERS

£6750 - £10,000

Barclays Bank has vacancies for experienced programmers in London and Knutsford, Cheshire.

### KNUTSFORD

Applications are invited from programmers who have 2/3 years' experience. A knowledge of COBOL or ASSEMBLER is required, preferably on large Mainframe IBM equipment under MVS. In addition, experience of developments with batch or on-line systems using Structured Programming Techniques is required. A knowledge of TSO using SPX, IMS and of financial systems would be advantageous.

### LONDON

There is one vacancy at this location. Applications are invited from COBOL programmers with 2/3 years' experience. A knowledge of RPG and SYSTEM 34 and WVSU, DFU and SEU, and some experience in the communication programming would be useful. The position is based in Barclays Merchant Bank and therefore some experience in this field would be of advantage. The successful applicant would progress into Systems Analysis work.

The normal fringe benefits associated with working for a major Bank will apply, including a non-contributory pension scheme, subsidised restaurant, excellent sports and social facilities and a profit sharing scheme.

Application Forms may be obtained from:

Ken Colebrook Esq, Manager (Personnel),  
Barclays Bank PLC,  
Management Services Department,  
Radbrooke Hall, Knutsford, Cheshire WA16 8BU  
or telephone Knutsford (0565) 3888 Ext 2743 or 2744



### COMPUTER OPERATOR/JUNIOR PROGRAMMER

A vacancy exists in the Data Processing department of The Bank of Insurance and Finance Union for a Computer Operator/Junior Programmer.

BISU runs an on-line membership records and financial system on an ICL ME29/37. Applicants are invited from persons employed in TME - CL and 2804 JCL who wish to progress into programming. Experience of an on-line environment and/or COBOL would be useful. Technical references will be required. Salary commensurate with experience.

Applications in writing to: Miss J. Douch  
BISU, 17 Hiltale, Wimbledon SW19 4NJ

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### LIVERPOOL POLYTECHNIC

Computer Services Department

#### SENIOR ANALYST/PROGRAMMERS

£8,658-£9,231 per annum

The Computer Services Department provides computing facilities to the Polytechnic based on networked DEC-20 and VAX systems, supporting over 150 terminals distributed across 12 sites.

Applications are invited for three newly created senior posts in the Programming Section. Applicants should possess a degree, or equivalent, and should have had a number of years of relevant experience. The successful candidates will each head a small group of Analyst/Programmers in one of the following areas:

1. Applications: Responsible for applications software/packages graphics, engineering and business software.
2. Systems: Support of TOPS-20 and VMS operating systems, networking micro systems, etc.
3. Administrative Computing: Responsible for the development of a comprehensive Management Information System for the Polytechnic.

These posts offer an ideal opportunity for self-motivated computing professionals to develop their experience and expertise in a stimulating environment using fully interactive networked computer systems.

PLEASE QUOTE REFERENCE No. LP/878.

Closing date is 14 days from the appearance of this advertisement.

Application forms and further particulars from the Personnel Office, Liverpool Polytechnic, Rodney House, 70 Mount Pleasant, Liverpool L3 5UX. Tel. No. 051-207-3801 Ext. 2513.

### Real-Time Expertise

£12-17,000+

High technology systems house needs designers and consultants to be involved in development and installation of Air Traffic Control and Telecommunications systems. Familiarity with Assembler or real-time/mathematical languages is desirable. Substantial remuneration package and relocation offered. Ref. 2402/A

### Analyst/Programmer

£14-15,000

Commercial or financial systems analysis skills coupled with an IBM Cobol background are required to fill four new vacancies. Candidates must be able to demonstrate real achievement in their career to date. Ref. 2402/B

### VME/B Systems Programmer

£10,000

Well-known retailing organisation specialising in leisure and electronics products requires systems programmer to support their 2966 systems. A minimum of two years' VME/B experience is required, at least six months must have been in technical support. Ref. 2402/C

### Analyst Programmer - HP

£8-15,000

A rapidly growing systems house requires more staff with knowledge of IMAGE, QUICK, QUIZ, etc. Minimum acceptable H.P. experience is two years and the rewards offered will depend upon how much relevant additional experience candidates can offer. Ref. 2402/D

### Analyst/Programmer

to £11,000

Mini manufacturer specialising in information capture systems, seeks analyst/programmer with experience of commercial real-time systems. A minimum of two years' high level language programming and the ability to deal with users is essential. Excellent career prospects. Ref. 2402/E

## Computer Professionals

4, Kendrick Mews, London SW7 3HQ Tel: 584 8790

### Office Systems

£12,000

Prestigious insurance organisation requires analyst programmers to introduce automated office systems. Some word processing equipment is in place and candidates should be willing to install more. Many other applications are planned and ability to work with users at all levels is essential. Knowledge of COBOL/BASIC on Wang equipment would be helpful. Ref. 2402/F

### Defence/Mathematical Modelling

£12,000

Subsidiary of major group requires Mathematical Modellers to work on Performance Evaluation of Trials Data, Algorithm Development and Pre-Trials Performance Predictions. A good maths degree plus relevant experience is essential. Fascinating projects and excellent rewards. Relocation assistance. Ref. 2402/G

### DEC Programmers

£ NEG

Major software and consultancy organisation requires programmers with COBOL or BASIC experience on PDP 11 or VAX hardware. A good standard of education, smart appearance and professional attitude is most important. Competitive salaries and first class training offered. Ref. 2402/H

### Micro S/W Development

£9-13,000

Vacancies exist for graduates with a minimum of two years' Assembler programming experience to join an existing team working on microprocessor-based P.O.S. Systems. Software design experience and knowledge of BASIC or PASCAL would be advantageous. Our client offers first-class career prospects. Ref. 2402/I

CP Computer Professionals looking after the professionals.

For further information, write to Computer Professionals quoting the advertisement reference no; alternatively phone: Isobel Bruce or David Fletcher on 01-584 8790.

## UK AND OVERSEAS SUPPORT SERVICES

### CONTRACT OR PERMANENT

TANGENT are a successful systems and software group with offices and work locations around the globe. Our support services are in high demand by many major organisations. We wish to increase our technical strength by recruiting the following computer professionals.

INTERNATIONAL DL/I, DATADictionary API COBOL or PL/I, CICS of IMS DB/DC S/38, RPGII COBOL, HP3000	Database Administrator Analyst All levels Programmer/Analyst Programmer/Analyst	Middle East Europe USA USA USA
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UK COBOL, HP3000 (IMAGE QUERY or VIEW a plus) COBOL, CICS, DL/I COBOL, IMS/DB, IMS/DC a plus NOMAD/RAMIS/INQUIRE COBOL, ICL 2900, VME/B (IMS, TPMS exp. useful) NATURAL, ADABAS COBOL, Jackson Structd Programming, DL/I, CICS Nixdorf 8860 WANG RPGII, S/38	Programmer/Analysts Team Manager Programmer/Analysts Programmer/Analysts Programmer/Analysts Programmer/Analyst Programmer Programmer/Analyst Programmer/Analyst Programmer/Analyst	London; Mnchstr. Aberdeen; Berks. Cheshire Home Counties Home Counties Home Counties London Middlesex London London Essex; London
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We will offer excellent rates of pay either contract or permanent to candidates for these requirements. Please contact:



Miss Adelle Starling  
TANGENT COMPUTER SERVICES LTD.  
102/103 South Street  
Barnford  
Essex, RM1 1RX  
Tel: Barnford (0780) 786261  
(24-hour answering service)

### Roche

Roche is a leading international pharmaceutical company. The Authority runs its batch and on-line systems on a 2880 Mainframe under VME 2800. Some 40 terminals are in use and a development programme is planned.

#### TECHNICAL SUPPORT PROGRAMMER

Applicants should have a knowledge of VME base and super-structure, and be aware of the principles of communication networks. Preference will be given to candidates with a knowledge of TPMS. Starting salary will be dependent upon experience.

#### SOUTH COAST

If you'd like to know what vacancies are currently available in Southern Counties and West Country ring Jeff Milsome, Managing Director, C&S APPOINTMENTS, 1 Wootton Gardens, Bournemouth (0202) 382100 (Office) or 320220 (Home & Mobile).

#### UNIVERSITY OF ABERDEEN

Department of Bio-Medical Physics and Bio-Engineering

#### RESEARCH ASSISTANT IN COMPUTED MEDICAL IMAGING

wanted to assist internationally-recognised team evaluating NMRI imaging relative to other medical imaging. Computing experience applied to image processing expected, preferably in biomathematics. The appointment which is supported by an MRC grant is for five years.

Compensating salary will be £2,085 rising to £3,800 per annum on the Range 1A Scale for Research and Academic Staff.

## MANAGEMENT & EXECUTIVE SELECTION

telephone  
01-637 9611

# SALES ENGINEERS

Management and Executive Selection has been providing professional recruitment services to the computer industry in the areas of sales, software and engineering for nearly 15 years.

We would now like to offer the opportunity to a sales engineer to broaden his career by selling our engineering consultancy recruitment services to computer manufacturers and distributors.

A field service background coupled with strong sales skills are the essential requirements as well as the ability to work in a thriving team environment.

The position will be based in London and of interest to people earning circa £15,000 p.a.

For an informal discussion ring Faye Ogilvie or Tony McGrath on 01-637 9611.

Suite 201/6 Albany House, 324 Regent Street London W1

MANAGEMENT & EXECUTIVE SELECTION



# PROGRAMMER/ANALYST

# ME29

## £9-10,000 CROYDON

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43-44 GREAT WINDMILL STREET, LONDON W1V 7PA  
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

Our client, part of a multinational engineering group, is looking for an unclassifiable kind of person. Not only a programmer with a keen interest in analysis — but someone who is willing to take part in all the functions of the d.p. department.

Reporting directly to the DPM, you will be expected to make a significant contribution to the running of this busy d.p. department. Your initiative and technical skills will make you an ideal candidate for moving into a supervisory role.

Ideally you have a background in COBOL programming, preferably gained on ICL ME29 or 2903/4 at a small installation, working in a commercial or manufacturing environment. Possibly you are seeking a fresh start — new source of inspiration. Our client can give you both. Not only responsibility, but also training in the uses of ME29 and design, and the stimulation of working in a progressive development environment.

If you feel that you have the all-round skills necessary to match this demanding role, telephone Sandra Hersh on 01-734 7394 during office hours — or on 01-458 6988 evenings or weekends.

**LOWBHAM**  
T.C.R. are seeking to expand their range of Advertising and Recruitment services to the Data Processing Sector by the addition of a number of Consultants. The people we are looking for will preferably be able to demonstrate a good track record in a similar role, alternatively experience at senior level within a computer services or sales environment. Probably aged between 25 and 35 the successful candidates will have a good level of education and possess the interpersonal skills necessary for these challenging and rewarding positions. We would be particularly interested in taking to Midlands-based consultants capable of taking on Managerial responsibilities in the near future. A very high level of income is envisaged for those with the ambition and determination to succeed, the remuneration package consisting of basic salary, commission, guarantee, bonus, health care plan and company car where appropriate.

**CITY**  
Our clients seek a mature, technically orientated individual for a key role within their expanding Systems Development group. The preferred candidate will have the ability to provide support, advice and guidance to design and programming staff in a CICS-COBOL environment and it is anticipated that management/supervisory responsibility will follow. Genuine career prospects together with a number of exciting projects make this an outstanding opportunity.

**CENTRAL LONDON**  
We are looking for a number of PL/1 Programmers and Analyst Programmers with around 2 years' experience for two highly recommended installations. Further development work has created the need in both cases and the opportunity to work with on-line and database systems is offered with career contact being a feature for Analyst/Programmers.

**CITY**  
A major company in the financial sector requires a Systems Designer. The requirement involves the analysis of their user problems, particularly in respect of a Data base environment, culminating in COBOL, PL/1, IMS or CICS and the ability to communicate effectively with all levels would provide the opportunity to develop your skills more fully in an environment which provides ample scope for advancement.

**CITY**  
One of the largest IBM installations in the world are currently seeking ANALYST PROGRAMMERS. This prestigious company can offer advantages commensurate with their status — a good working environment and the benefit of their name and position to add to your track record. In line with their requirements, candidates seeking these posts should have a solid background in COBOL (preferably DOS VSE) with a banking or insurance background useful. There is also considerable scope for future career advancement within the DP Department.

**CITY**  
Our clients are currently seeking an Analyst Programmer with banking experience to be used in a world wide supervisory capacity. The Salary and benefits would be of interest to those seeking a more responsible and stimulating environment. The suitable candidate will be articulate and resourceful and will have experience in IBM GSD equipment with at least 2 years' RPG II including coding, testing and documentation. Constant on-the-job training will help you keep abreast of current developments. This post offers opportunities to quickly develop career potential.

**CITY**  
A large American bank in the city currently requires a systems programmer with DOS VSE VM CMS CICS DLI. A good opportunity for those wishing to enter a banking environment. A full range of benefits as well as negotiable basic salary and excellent career prospects.

**WEST LONDON**  
Do you have a minimum of 2 years' experience and a real knowledge of CICS and MVS? Are you interested in sales and marketing support systems? Do you wish to enter a vigorous market-orientated company interested as much in your future training and prospects as in its own success? If so our client, a famous name in sales and marketing, can offer a truly comprehensive benefits package in addition to an excellent basic salary. Real career opportunities and a pleasant working environment.

**CITY**  
Two exciting opportunities have arisen for persons with strong BASIC, BASIC+ or +2 programming backgrounds gained in a DEC environment. A major specialist Systems House is seeking further staff for its Banking systems client support group in London and abroad. An attractive salary range, reviewed at 6 monthly intervals, is supplemented by a generous company benefits package.

**ESSEX**  
An Essex-based company has requirements for a Programmer and Systems Analyst to join their financial applications development team working on newly installed ME29 equipment. Analysts with 2 years' formal Analysis and Programmers with 3 years' ICL COBOL will be rewarded with good salaries and a valuable benefits package.

**CITY**  
Our client, a leading insurance group, is seeking a Senior Analyst and Analyst/Programmer for major projects development. At least four years' design experience is required for the senior post and two years' at a similar level for the Analyst/Programmer, an ICL, VME/DME, Cobol background is desirable in both cases. An excellent benefits package, including subsidised mortgage and bonus scheme, is offered.

**CITY**  
Expansion of a major International Bank's E.D.P. team affords exciting opportunities for Programmers with at least 2 years' experience in banking or related applications. The work involves the development of systems utilizing DEC equipment and a Basic/RTSE background would be of great interest. A negotiable salary is augmented by a full Banking Benefits package.

**CITY**  
Our client, a leading insurance group, is seeking a Senior Analyst and Analyst/Programmer for major projects development. At least four years' design experience is required for the senior post and two years' at a similar level for the Analyst/Programmer, an ICL, VME/DME, Cobol background is desirable in both cases. An excellent benefits package, including subsidised mortgage and bonus scheme, is offered.

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**TCR** **Targa Computer Recruitment**  
6 Liverpool Street London EC2M 7NH Telephone 01-283 9941 Telex 894858

## SYSTEMS DEVELOPMENT SUSSEX COAST

Our client is about to embark on an aggressive development programme using an ICL 2946 with IDMS, STATUS, PROSPER and other databases. They require additional staff with a sound COBOL background to strengthen their small friendly team. A knowledge of IDMS is preferred but training will be given if necessary.

**ANALYST/PROGRAMMER** to £12,500 + Bonus

Acting as assistant to the Data Processing Manager, you will specify, design and implement systems enhancements and developments. A minimum of 3 years' ICL COBOL is essential and preference will be given to applicants with on-line systems experience.

**SENIOR PROGRAMMER** to £11,000 + Bonus

A Senior Programmer or Programmer/Analyst is required to be responsible for maintaining a stable operating environment and assist in all aspects of system development. You will also be responsible for program specification and design through to testing and implementation. Extensive COBOL programming experience and a good grounding in DME utilities is essential. IDMS or on-line programming experience will be advantageous.

A significant benefits package includes relocation assistance if necessary.  
Please reply quoting Ref: RIR

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They have, in-house, a large Prime Mini-computer dedicated to this development work and this is networked to a number of other machines within the organisation. A wide variety of Graphics Display Equipment is installed for the development of Graphics Software.

Applicants will be graduates and have a good working knowledge of Fortran gained in a technical environment. It is expected that for the 3D Modelling position, candidates will either have a strong mathematical background or some specialist experience in Modelling/3D Graphics.

This is a unique opportunity to join a company whose success to date outstrips any of its nearest rivals.

Please contact David Hendry.

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We are recruiting on behalf of a major Multi-National Company, involved in the manufacture, retail and distribution of a wide range of engineering products for the industrial and domestic markets.

A recent major policy decision has meant that our Clients now wish to augment their Regional Computer Resource by extending their technical support team with ambitious and forward thinking Systems Support Professionals.

The Corporate Management Services Department provides computing facilities to over 10 Companies within the Group through 4 Regional Computer Centres. The Durham Computer Centre supports the largest UK manufacturer and market leader in each of its product ranges, through systems developed on an IBM 4341. The Centre now requires a further 2 Systems Programmers to join the Technical Support Team which provides software services to applications development and operations staff, with additional responsibility for the support of Personal Computing facilities and micro computer software.

## Systems Programmers

### County Durham

### to £10,500 + Relocation

The hardware operates under VM/DOS/VSE, and candidates are expected to be familiar with the installation and maintenance of software, and have experience of at least one of the following: DOS/VSE,

CICS/DLI, VM/SP but other software skills gained within an IBM environment will also be seriously considered.

Seldom are such doors opened, and consequently candidates should grasp the opportunity and contact **BRIAN MITCHELL** on 061-833 0427 or 061 485 7798 (Evenings & Weekends before 9 pm).

Interviews will be held in Durham, Leeds, Manchester, Birmingham and London.



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Technical, Sales & Management Appointments

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Queenway, Birmingham B3 3JY  
021-258 5761

**NORTH**  
International House, 84 Deansgate,  
Manchester M3 2ER  
061-833 0427

**BELOUN**  
Avenue Louise 327,  
Belle 4, 1050 Brussels  
010 322-840 7181/771

**HOLLAND**  
Willemsparkweg 82,  
1071 H.M. Amsterdam  
010 3120-760417







## OEM Sales Executives

**A new UK Manufacturer for Computer Peripherals**

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**c. £10,000**

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Our Client designs and supplies complete Winchester disc sub-systems, which through a range of host adaptors and disc operating software can be linked to most popular micro and mini computer systems. They are also the sole European representatives for a range of leading American 5 1/4" Winchester disc drives and plans are well advanced for them to become their UK manufacturer. In addition, the Company has captured the marketing rights for a range of complimentary peripheral products.

This highly competitive portfolio is sold and marketed direct and via accredited distributors throughout Europe, with full technical support and after sales services provided, and has attracted in less than one year multi-million pound OEM contracts.

Because of this rapid expansion, our Berks based Client now seeks to appoint two competent OEM Sales Executives capable of maintaining existing and developing new OEM business by negotiating directly with large end users, initiating sales seminars/exhibitions and providing sales information and training to the dealer sales forces.

Preferably aged 25/35 years you should have an electrical/electronic engineering qualification, and have a successful track record in selling computer peripheral products to OEM markets. However, you will be given serious consideration if you are currently holding a technical customer support role in a related field and strongly desire a career in sales.

For further information write to **Peter Dudgeon** or telephone him on **01 935 0671** (24 hour answering service) or on St. Albans 37702 evenings between 8.00-9.00pm.

Technical Sales & Management Appointments

**ESR**

**Specialist Computer Recruitment Ltd**

**SOUTH**  
James House, 46 James Street,  
London W1M 6HS  
01-935 0671/486 0481

**MIDLANDS & INTERNATIONAL**  
35-37 Great Charles Street,  
Queensway, Birmingham B3 3JY  
021-236 3781

**NORTH**  
International House, 84 Deansgate,  
Manchester M3 2ER  
061-333 0427

**BELGIUM**  
Avenue Louise 327,  
Boite 4, 1050 Bruxelles  
010 322-840 7181/71

**HOLLAND**  
Willemsparkweg 92,  
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010 3120-760947

## Customer Engineers

This is your opportunity to join Storage Technology, world leaders in the design, manufacture and supply of IBM compatible data storage products.

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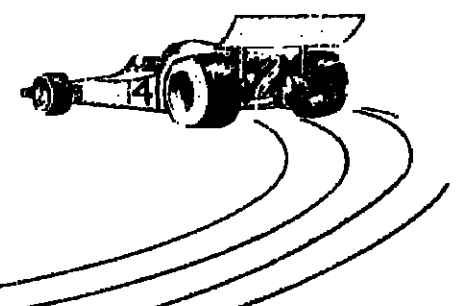
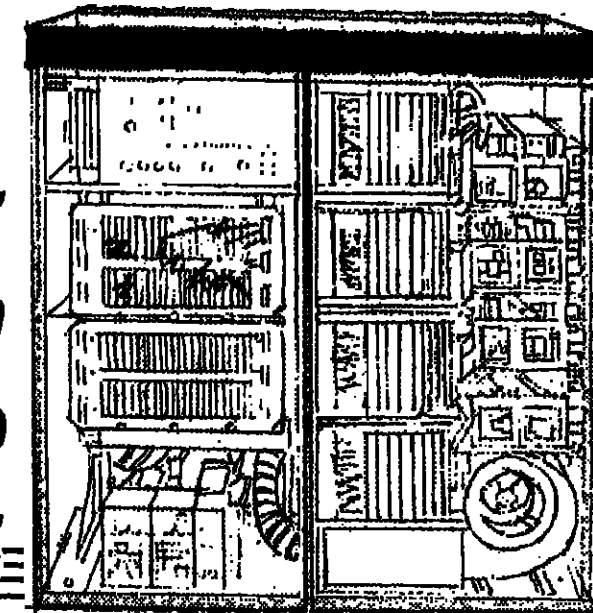
- A highly competitive basic salary
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Substantial growth in our installed base in the UK means expansion of our field service

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If you have a good knowledge of IBM and/or IBM compatible systems and peripherals, specifically tapes, disks and printers; if you can combine technical ability with good customer relations skills, we would like to hear from you.

Write now with full personal and career details to our Personnel Manager, Storage Technology Limited, Churston House, Portsmouth Road, Esher, Surrey, or telephone Esher (0372) 67041 for an application form.



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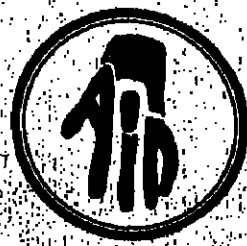
29-33 Central Chambers, Ealing Broadway, London, W5 2NR  
Telephone: 567 8184

Clyde Perkins and Roger Haylock wish to announce the launch of their new Business Aid Employment Ltd. — a Computer Recruitment Consultancy specialising in Contract and Permanent Systems Programming, Operations and Word Processing assignments.

They would like to place on record their appreciation to all of you who registered with them over the last ten years and extend an invitation to old and new friends to join them in their new venture.

Please telephone Clyde, Roger or Stephen Hooks at the above number or complete and return the registration form at the bottom of this coupon.

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up to c. £12,000

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Currently our hardware includes IBM 3033, 3031, 4300s, 8100s, and an ICL 2960, servicing extensive real-time and on-line systems, with a large, rapidly expanding telecommunications network.

The successful applicant will have a minimum of four years' Data Processing experience, part of which should have been at Shift Manager level. The applicant should have experience of all major aspects of operations management, with knowledge of current IBM hardware, software and data communications.

The jobholder's duties will include the on shift supervision of computer staff engaged in operation and support of mainframes and the network control facility at our Data Centre. Additionally, the postholder will assume first line responsibility for all Data Centre functions outside normal office hours.

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Severn Trent Water Authority  
DERWENT DIVISION

## Data Processing Officer

£13,088-£14,544 p.a. plus car allowance  
Based at Divisional Headquarters, Derby

The Authority has recently approved a new computer strategy to be implemented throughout this decade. The major elements of the strategy provide for mainframe computing on an integrated distributed network between the eight Divisional Headquarters locations and Regional Headquarters.

This is the senior data processing position in the Division and the post holder will report to the Assistant Divisional Manager (Services).

Duties will include contributing across the whole range of information technology issues in the Division as well as assisting regional management with the Authority's implementation of information technology.

Candidates must have a depth of experience of managing the production services side of a computer department, incorporating computer operations, data preparation, control, scheduling and associated aspects. Further, involvement in development and maintenance of computer systems is essential. An appreciation of the concepts of Database and data communication would be an advantage, as would previous water industry experience. In addition, those applying should have a minimum of seven years' relevant experience in data processing, together with a good degree, preferably in a numerical discipline.

Application forms, quoting reference DPL, are available from the Personnel Department, Severn-Trent Water Authority, Derwent Division, PO Box 51, Raynesway, Derby DE2 7JA. Telephone: Derby 601461, extension 318 or 320.

Closing date: 10th March, 1983.  
This post is open to both men and women.

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For further details, or to apply, contact Steve Sykes on Leeds (0532) 455911 during office hours, or on (090484) 350 evenings and weekends, or write to the address below; quoting reference CW848



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COMPUTER SERVICES

Lorient Computer Services  
Recruitment Consultants  
OCS House, Servia Road  
Leeds LS7 1NJ  
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This is a senior position in the company leading later to management of the D.P. function. Benefits include company pension, medical insurance, and discounts on company products.

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The successful applicant will have had previous experience in the servicing and repair of the N.C.R. range of retail and financial systems.

Good career prospects and excellent salary. Age 25/35, single status contract, free accommodation and air tickets to the U.K. for every leave period, plus company vehicle provided.

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## BUSINESS SYSTEMS PROGRAMMER

As a leading British company in the design and development of microcomputing systems, Acorn Computers have achieved outstanding success.

We are now looking for a Programmer with flair, imagination and excellent communication skills to join our business systems group.

Candidates should have an Assembler programming background and at least three years' experience of microcomputer systems. The ability to schedule projects is essential.

Experience, at a technical level, of any of the following would be an advantage:

CP/M, MP/M, MSDOS, UNIX, XENIX, word processing, business graphics, PASCAL, MODULA-2

Please send written c.v. to:

Deborah McGovern, Personnel Officer, Acorn Computers Limited, Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN



## MIDLANDS AND NORTHERN REQUIREMENTS

IBM 4341  
IBM 4341  
IBM 4341  
IBM System 38  
ICL ME29  
ICL 2900  
ICL 2960

MVS, IMS, DB/DC, DCL1  
DOS/VS, CICS  
MVS JES 2, VTAM, MSHF  
MAAPICS (SCOTLAND)  
TME  
VME/8, IDMS  
DME & VME/8  
DRS EQUIPMENT  
VRT II  
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COBOL  
COBOL  
RPG 111  
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IBM 4300  
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IBM 3033  
IBM  
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Honeywell DPS Mod 82  
C.T.L.  
OVERSEAS - HOLLAND  
HOLLAND  
USA

VM/VS, CICS  
OS, ADF, DL1  
DOS, V5AM  
DOS/VS, CICS  
ADABAS/NATURAL

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VME/8, IDMS/TPMS  
DMS 11, GEMCO5,  
GCOS

COBOL/MARK IV

COBOL

ADABAS/NATURAL  
GRAPHICS/INTERGRAPH  
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ALL LEVELS REQUIRED  
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021-236 3781

NORTH  
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Manchester M3 2ER  
061-833 0427

BRUSSELS  
Avenue Louise 327,  
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IBM MVS ASSEMBLER JES2, Sys/Prog.  
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SYSTEMS ANALYST/COMPUTER PROGRAMMER  
TRANSPORTATION PLANNING  
POST NO 3002084 - SALARY GRADE SO1/SO2  
(£8,858-£10,071)

Applications are invited from suitably qualified and experienced persons for the above post in the County Transportation Unit.

The County operates an IBM 4341 system using VM/CMS and there is a remote VDU situated in the County Planning Department for Transportation planning use. In addition the Transportation Unit has the use of an on-line telecomp graph plotter.

The successful applicant will be expected to control the use of, and to maintain, and further develop computer programs for transportation planning. Preference will, therefore, be given to applicants who have a knowledge of transportation planning systems. An ability to program in Fortran is essential. It would also be considered an advantage if the applicant had knowledge/experience of an API, packages ADI and ADPS.

Applications (no forms), giving full particulars of age, experience, qualifications and present appointment, including salary together with the names and addresses of two referees, should reach the County Planning and Development Officer, Martin Street, Stafford ST16 2LE by 14th March, 1983. Relationship to any member or Senior Officer of the County Council must be declared.

All applicants are asked to note that it is the County Council's view that it is desirable for their employees to be members of an appropriate Trade Union.

STAFFORDSHIRE COUNTY COUNCIL

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Junior Consultants to £11

Leading Software Consultancy offers opportunity to travel in Europe working on an interesting range of real time projects - Mini - Micro. This is your chance to move ahead.

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Special Software Group within major Company seeks Real Time Software expert. Expand your knowledge with their new VAX 11/780 and 2800 Microcode. Tremendous opportunity for real career progression.

Ring Vincent Melling now on 01-549 8441 or 01-549 8279 between 7-10pm

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## OIL EXPLORATION SYSTEMS

We have a vacancy for a programmer with 2 to 3 years' experience to join us in Devon to work on developing Geological Interpretation Techniques on our Gould 5277 32 bit mini.

Language is Fortran 77 and applicant's experience should preferably include Interactive Microcomputer Programming, Cartography, Graphics, Geology and Oil Exploration Techniques.

If you have any relevant experience then please send your cv to: A. G. Woodhouse, South Portland and Associated Limited, 285 High Street, CROYDON CR9 1NF or telephone 01-406 6001 for more details.

## BEDFORDSHIRE

Systems Programmer  
Operations Analyst  
Cobol Programmers

£13,500  
£9-11,000  
£9,000

c.v.s to: KEYNES PERSONNEL, 354 SILBURY BOULEVARD, CENTRAL MILTON KEYNES

## PROGRAMMER

You could put your talents and experience to good use by joining this international oil and petrochemical engineering contracting company's Management Information Services Department at their Leicester Square head office.

There will be plenty of opportunity to design, develop, test and implement new systems, as well as maintenance of existing systems. It will involve the conversion from an existing system to an IBM 3033. Applicants should have at least two years' working experience with using COBOL in an IBM MVS environment and be willing to take full responsibility for ADS-ON LINE and POCUS in an IDMS database environment.

Personnel, Purchasing, Accounts payable, Engineering and Cost Control Systems are the areas where your experience will be put to use.

An excellent salary, free private medical insurance, season ticket loans scheme, free life insurance, contributory pension scheme etc. will be offered.

If you feel that you can meet the bill, please Mr Gerald Pennington Manager, Catalytic International Inc., 48 Leicester Square, London WC2H 7LZ. Tel: 01-830 4377. No agencies please.

**CATALYTIC**

## MANAGEMENT & EXECUTIVE SELECTION

telephone  
01-637 9611

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London to £12K BASIC + car  
Experienced field engineer with micro expertise, good communication skills, commercial awareness. Sophisticated business systems. Leading to management. (2307).

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UK wide to £8-10K + O/T + S/BY + car  
All levels. Mini/Mainframe/Perf. background. Major manufacturer offers on-going training and latest technology. (2302).

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For more details ring:  
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Suite 201/8 Albany House  
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MANAGEMENT & EXECUTIVE SELECTION



## OPPORTUNITY IN SYSTEMS PROGRAMMING £10,000-£11,000 W.I.

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At present you are either an applications programmer in an IBM site, having used COBOL, FORTRAN or Assembler for approximately 2 years, or a junior systems programmer using MVS. Educated to degree level, you have a strong technical interest and the potential to seize this exciting opportunity to join a highly professional systems team. Formal training will ensure that your skills will encompass all areas of the systems development including teleprocessing and a wide variety of hardware and software products.

Amoco offer both the salary and full range of company benefits that one normally associates with an International oil company. Thus, if you are a self motivated and talented individual telephone Sandra Hersh on 01-734 7394 during office hours or on 01-458 6988 evenings and weekends.

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Staying in one user environment: well, in career terms, that's a big hazard. Wouldn't you give your right arm to get in on the most up-to-date, the most prestigious IBM System/34, /38, /23 and Series 1 projects? And with each project assignment lasting around an average of nine months, log continuous new applications experience - and benefit from a policy of filling senior management posts strictly by promotion.

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£8,367-£11,434 p.a. (from April 1983)

A Proficiency allowance scheme is in operation.

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For further details and an application form please contact (quoting reference number V19/83) The Recruitment Officer, Oxford Regional Health Authority, Old Road, Headington, Oxford OX3 7LF. Telephone: Oxford 64861 Ext. 246/268. Closing date: 11th March, 1983.

Oxford Regional Health Authority

*your appointments register*

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IBM/BURROUGHS to £15K  
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Our client, in addition to being a major, multi-industry corporation, is also the prime contractor for the external tank of the much publicised and highly successful space shuttle programme. The recent flights have been the culmination of years of design and development work conducted by experts in many fields - however, this has been only the start of a long term commitment to a totally new concept in space transportation. British Engineers have been engaged by our client for many years, and now in line with the demands of this unique project, they are also looking for a number of HNC/degree level computer professionals in the following areas:

- Programmers
- Analysts
- Programmer/Analysts
- Database Analysts
- Database Administrators

Candidates for these positions must have UNIVAC 1100 series experience. The programming is in COBOL and knowledge of some of the following software support aids, currently in use at our client's installation, would be advantageous.

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The major applications include:—  
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All immigration and travel formalities will be handled by our own experienced staff to ensure a smooth transfer to the USA.

For further information and an application form, ring us today on 01-631 4411 and ask for either John Goldsmith or Frances Allen. Alternatively, write to us, quoting reference number 3085 at Moxon Dolphin & Kerby Ltd., 178-202 Great Portland Street, London W1N 5TB.

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INTERNATIONAL RECRUITMENT









**UNIVAC 1100 SPECIALISTS**  
Major international company requires UNIVAC 1100 Specialists prepared to work on a variety of assignments at home and overseas.  
to £18,000 + expenses  
Ref: C9800

**PL1 & COBOL PROGRAMMERS to PROJECT LEADERS**  
Our clients, situated in London, Home Counties and Sussex need Programmers to Project Leader level with PL1 or COBOL experience to develop real time commercial systems, including Banking, using CICS and DL1. Knowledge of CICS an advantage. Benefits include BONUS schemes, MORTGAGE and insurance facilities.  
to £16,000  
Ref: C9887

**TWO PROJECT LEADERS**  
Two Major international companies require professionals with five to six years' D.P. experience, ideally with an IBM background, to lead a small development team in DOS/VSE and MVS environments. The successful applicants must have sound managerial/leadership qualities rather than specific hardware knowledge.  
MIDDX to £15,000  
Ref: A9887

**BASIC PROGRAMMERS to PROJECT LEADERS**  
A number of clients in London/Home Counties are seeking Programmers and Systems Programmers to Project Leader level with a sound knowledge of BASIC+ or BASIC+2, under DEC RSTS/E, RSX11 or VAX/VMS, to work on a wide variety of real time scientific and commercial systems including Banking. Vacancies also exist for MINI/MICRO specialists.  
to £15,000 +  
Ref: C9786

**RPG2/3 SPECIALISTS to DPM level**  
A number of our clients situated in London/Home Counties and Southern England need Programmers and Analysts with two years' RPG2 and/or RPG3 experience, preferably on System 34 and/or System 38. A wide variety of commercial systems include International Banking where opportunities exist for training on RPG3, if required. Benefits include subsidised MORTGAGE scheme and PROFIT SHARE.  
to £15,000  
Ref: C9780

**PROGRAMMERS to SENIOR ANALYST level**  
We have been retained by an international organisation who needs experienced systems and programming personnel to develop a wide variety of commercial applications. Applicants must have a sound knowledge of COBOL, preferably in a DOS/VSE, CICS/DLI environment, with a bias towards manufacturing systems. Excellent benefits.  
HANTS to £14,000  
Ref: A9884

**SYSTEMS PROGRAMMERS**  
Six of our clients need BAL Systems Programmers to take responsibility for a wide variety of systems, from DOS/VSE to MVS sites. A knowledge of CICS/DLI would be useful. Excellent fringe benefits. RELOCATION package applies only to a Sussex site.  
SUSSEX/LONDON/BEDS to £14,000  
Ref: A9831

**SENIOR ANALYSTS**  
Major ICL User needs Analysts to take leading roles in the development of a variety of commercial applications. Successful applicants should possess leadership qualities, together with an ICL COBOL background. Knowledge of TP and/or IDMS useful.  
LONDON to £13,900  
Ref: C9893

**HP 3000 SPECIALISTS**  
We have received vacancies for Programmers and Analysts/Programmers to Project Leader level with a minimum of two years' COBOL experience, ideally in an interactive HEWLETT PACKARD 3000 environment. Excellent benefits include PROFIT SHARE, BONUS, BUPA, share purchases schemes, etc.  
LONDON/BERKS/BEDS to £13,700 +  
Ref: D9889

**SYSTEMS ANALYST/DEPUTY DPM**  
This expanding international organisation is seeking someone to act as deputy to the D.P. Manager in a busy IBM System/364 and 38 site. The successful applicant will have sound commercial design experience, plus ability of communicating with Users at all levels. A knowledge of RPG3 would be an advantage, but formal training will be given.  
LONDON £13,000 + benefits  
Ref: C9834

**ICL PROGRAMMERS & ANALYSTS**  
A number of VME/B clients based in London, Surrey, Middlesex and Sussex need development and technical support staff with a minimum of two years' ICL COBOL experience. Knowledge of IDMS is an advantage although training is given.  
to £12,500  
Ref: C9834

**DEC PROGRAMMERS**  
Our client needs two Programmers with two years' COBOL experience to assist in the development of applications on their recently installed DEC/VAX machine under VMS. Benefits include free exotic holidays abroad!  
LONDON to £12,000  
Ref: A9895

**SYSTEMS ANALYST**  
Our Client, a leading manufacturing organisation needs an Analyst with a minimum of two years' commercial design experience to assist in the development of a wide variety of application areas. A knowledge of CICS and DL1 would be an advantage. Excellent benefits include a RELOCATION package, where appropriate.  
HERTS to £12,000  
Ref: D9889

**PL1 PROGRAMMERS (ANALYSTS)**  
Two leading manufacturing companies have vacancies for Programmers and Programmer/Analysts with a minimum of 12 months' PL1, CICS/DLI or IMS experience. RELOCATION expenses are paid, where appropriate, together with associated large company benefits.  
HERTS/BERKS to £11,500  
Ref: D9889

**BAL PROGRAMMERS**  
Two major Banking and Software organisations need ASSEMBLER Programmers to take leading roles in the development and conversion of various special systems and modules. A knowledge of COBOL would be useful. These positions could lead to advancement into systems programming using CICS, plus other spheres of the business operations.  
LONDON to £11,000 +  
Ref: C9880

**DEC PROGRAMMER**  
Unique opportunity for someone with good communicative skills and a working knowledge of RSTS/E and BASIC+2, to be solely responsible for running of a 11/70 installation. Excellent conditions of employment are offered.  
MEDWAY/KENT to £11,000  
Ref: B9881

**NEAT 3 PROGRAMMER**  
Large manufacturing company needs someone with at least two years' NEAT 3 experience for their NCR 5485 installation. A knowledge of on-line programming is an advantage. Excellent company benefits apply.  
N KENT to £11,000  
Ref: B9880

**FORTAN SPECIALISTS**  
Programmers are required to join existing development teams to work on a wide variety of applications including scientific, research, engineering and commercial projects. Excellent benefits include annual BONUS/PROFIT SHARE, B.Sc. 2/1/2/2 Graduates for junior levels.  
LONDON/HOME COUNTIES to £11,000  
Ref: C9842

## BUICK COMPUTER SERVICES

72 Rochester Row  
Victoria London SW1P 1JU

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Or call evenings and weekends

REF. A: 01-316 2700  
REF. B: 01-794 5857  
REF. C: 01-942 1176  
REF. D: 01-843 0143

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
Ref. No. \_\_\_\_\_ Home Tel. \_\_\_\_\_

The above vacancies are only a token selection taken from our current files and we are always pleased to hear from computer professionals wishing to further their career objectives

**RPG2/3 ANALYST/PROGRAMMER**  
This leading manufacturing organisation requires someone with a minimum of two years' RPG2 and/or RPG3 experience. This position would suit someone wishing to be trained in RPG3, where appropriate.  
HERTS to £11,000  
Ref: D9861

**ICL PROGRAMMERS & ANALYSTS**  
(NEW SITE)  
Our clients, a leading manufacturing company, have recently installed their first computer, an ICL 2866, and are consequently seeking Programmers and Analysts with VME/B COBOL, experience IDMS/Database (TPS) knowledge would be useful. Excellent career paths and conditions of employment apply.  
E LONDON to £11,000  
Ref: A9881

**SYSTEMS ANALYSTS**  
Two large construction companies are both seeking Analysts with a sound COBOL programming background, to develop systems on the ICL ME29. The successful applicants will be responsible for supervising a small team of programming staff on varied applications.  
SUSSEX/MIDDX to £10,500  
Ref: A9885

**ANALYST/PROGRAMMERS**  
This large publishing company are looking for people who want to develop their skills within a progressive D.P. environment. A working knowledge of COBOL is essential, preferably in a DOS/VSE, CICS environment. Excellent prospects and benefits package is offered.  
HANTS to £10,000 +  
Ref: A9892

**JUNIOR ANALYST**  
Major Software organisation need a Junior Analyst with a good financial or general commercial background, capable of handling bespoke systems in a MINI/MICRO environment. Programming knowledge may be useful, but not essential.  
LONDON to £10,000  
Ref: C9872

**PROGRAMMERS & ANALYSTS/PROGRAMMERS**  
(ANY MAINFRAME)  
This service company has vacancies for personnel with a minimum of 12 months' COBOL experience, to undertake development of new applications using DEC VAX kit in a DPM environment. Previous DEC experience an advantage, but not essential. Excellent fringe benefits.  
BUCKS to £10,000  
Ref: D9888

**RPG2 to RPG3 PROGRAMMER**  
Leading insurance company needs a Programmer with either RPG2 or RPG3. Full training will be given on their System 38 Site. A well-structured career path and excellent monetary benefits apply.  
KENT to £10,000  
Ref: B9894

**ICL PROGRAMMERS**  
Leading financial organisation based in N Surrey require experienced Programmers with at least 18 months' COBOL. Knowledge of IDMS would be useful. MORTGAGE, BUPA schemes, and many other benefits are offered.  
SURREY to £9,500  
Ref: B9896

**JUNIOR BAL PROGRAMMER (One year)**  
This financial organisation wishes to recruit someone with approximately one year's ASSEMBLER experience gained in an IBM environment. Excellent monetary benefits apply.  
CITY to £9,000  
Ref: B9880

**DOS SENIOR OPERATOR**  
This international company requires someone with a minimum of two years' sound technical experience in DOS/VSE, CICS and VTAM. Benefits include MORTGAGE facilities, etc.  
LONDON to £11,000  
Ref: C9818

**MVS OPERATORS**  
Two leading organisations require Operators to Shift Leader level with MVS/JES2 experience to complement their expanding team structures. Excellent prospects and benefits apply.  
MIDDX/LONDON to £10,400  
Ref: C9843

**IBM SHIFT LEADER**  
A minimum of three years' DOS/VSE experience coupled with good supervisory skills are essential for this TWO-SHIFT environment. Excellent modern working conditions and benefits apply.  
N SURREY to £9,500  
Ref: B9876

**IBM SHIFT LEADER**  
Financial organisation requires someone with OS/VS1 or VM experience capable of taking charge of a shift in an IBM 4300 environment. Benefits include MORTGAGE scheme, BUPA, etc.  
BERKS to £9,200  
Ref: D9879

**ICL OPERATORS**  
Retailing group requires experienced VME/B Operators with at least two years' background. Excellent modern working conditions apply, together with full relocation costs paid, where applicable.  
WEST COUNTRY to £8,000 +  
Ref: B9891

**DEC SHIFT LEADER (Two shifts)**  
Ideally, the successful applicant should have three years' RSX 11/VMS experience. Familiarity with VAX 760/780 machines would be desirable. An extremely generous shift allowance is offered making the financial package very rewarding.  
ESSEX to £8,000 + S/A  
Ref: B9893

**IBM OPERATORS**  
This financial organisation need two Operators with DOS/VSE, VM expertise. Benefits include MORTGAGE subsidy, monetary loans, etc.  
CITY to £7,300 +  
Ref: B9879

**IBM OPERATORS**  
Our client is relocating to NEWBURY later this year and are wishing to recruit experienced DOS/VSE Operators. Initially all travel costs to their present site in Surrey will be paid. DAYS ONLY.  
BERKS to £7,000  
Ref: B9898

**DATA CONTROL CLERKS**  
(ANY MAINFRAME)  
A leading international organisation is seeking two Data Controllers with a minimum of two years' experience. These positions are FLEXI-DAY hours only with the occasional overtime.  
LONDON to £7,000  
Ref: C9892

**ICL OPERATORS**  
Our client, a large Bureau, need Operators with 18 months' DME/GEORGE 2 experience. The site operates a three-shift system and offers plenty of overtime, benefits etc.  
N KENT to £6,300  
Ref: B9880

**HONEYWELL OPERATOR**  
Our client requires someone with a minimum of six months' GCOS experience to work a TWO-SHIFT system in a HONEYWELL level 66 environment. Excellent career prospects and company benefits.  
HANTS to £6,000  
Ref: A9828

## ASSOCIATES

# FINANCIAL MODELLING CONSULTANTS

Our client is one of the most successful and profitable international computer service organisations in the UK. They offer a full range of services to management, including financial and corporate planning. Their success is based on a continuing philosophy of recruiting expert committed staff in key market disciplines, and their enviable reputation for product innovation. In order to enhance the excellent pre- and post-sales support that they provide, they now seek two professionals with experience of Financial Modelling for the positions of:

## CONSULTANT

up to 10K

- ★ Ideally you will have a degree
- ★ You will currently be working with financial modelling packages, either as a user or in a support role.
- ★ You will have good communicative skills, both written and verbal.
- ★ You can work well under little supervision and have a good understanding of business operations.

## SENIOR CONSULTANT

up to 12K

- ★ You should have a degree, plus three years' computing experience.
- ★ You will have experience in sales support for a software house, bureau, or manufacturer.
- ★ Or, you will have used a financial modelling system (preferably FCS-EPS) in a senior role in a user organisation.
- ★ You are looking for an opportunity to gain project management experience on a variety of applications.

These positions are based in Central London. If you enjoy variety and challenge and are interested in a positive career progression, telephone HUGO FAIR on 01-828 2416 or write enclosing a brief résumé (quoting Ref: HF/101)

205 VICTORIA STREET, LONDON SW1E 5NE.  
TELEPHONE: 01-828 1574/1327

# Analyst Programmers

up to £13,000

We are setting up a new team to work on systems of the future incorporating all aspects of information technology, and have vacancies for a number of Analyst Programmers at WRC Engineering in Swindon.

Candidates should hold a degree in Computer Science or equivalent, and have several years experience in one or more of the following areas: DATABASE, GRAPHICS, OR COMMUNICATIONS. The successful candidates will be experienced in the application of the latest hardware technology and software techniques, and will have the ability to work with minimal supervision.

WRC runs a network of VAX computers and has a progressive computing policy to support its research projects, management information systems and text processing.

Conditions of employment include a contributory pension scheme and assistance with relocation expenses where applicable. Applications in writing, giving full details, quoting post no. 392, to: Mrs E. Bunting, Personnel, WRC Engineering, PO Box 85, Swindon, SN5 8YR.

Closing date: 11 March 1983.



## RESEARCH ASSISTANT

(General Administrative Grade)

Required for newly created post. Work involves computer surveys of Health Services provided by the Authority and assisting in the development of information systems.

Candidates must be fully conversant in computer technology and have knowledge of information systems.

Post is for an initial two-year period. Informal enquiries to Dr J. M. Bainbridge, District Medical Officer, Tel: Darlington 60100 Ext. 3082.

Application form and job description from Personnel Department, Memorial Hospital, Darlington, Co. Durham. Closing date for completed applications 7th March, 1983.

(28840)



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## UNIVERSITY OF BIRMINGHAM

DEPARTMENT OF ELECTRONIC AND ELECTRICAL ENGINEERING

## COMPUTER OFFICER

Applications invited for post of analyst/programmer to work with the departmental PDP11 machines on wide range of research and teaching activities and to interface with microprocessor systems, mini computers and University mainframes. Experience with UNIX desirable.

Salary on the Computer Officer scale, £5,550-£9,370-£11,105 plus superannuation. Starting salary will depend on age, qualifications and experience.

For further particulars, phone 021-472 1301, ext. 2559, quoting reference 52.

No formal application form. Three copies of application, including full Curriculum Vitae and naming three referees to Assistant Registrar, (Science and Engineering), P.O. Box 363, Birmingham B15 2TT, by 11th March, 1983.

(2874)

## CROSSWORD

Solution to Prize Crossword No. 37

L	E	G	S	H	O	W	R	E	A	R	S	U	P
E	R	O	I	O	R	O	O						
T	H	E	R	M	I	D	E	M	A	R	K	S	
U	N	E	H	O	Y	E	T						
P	R	I	K	E	S	T	A	F	F	S	A	N	I
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S	U	S	P	E	N	D	M	O	C	K	E	R	Y

THIS month's £10 prizewinner is Derek Harrison, director of Yorkshire Computer Services in Bradford. Prizes of £5 each go to Nick London, an analyst/programmer with the Office of Population Censuses and Surveys in Kent, and to Chris Clark, who is a program support representative with IBM in Chiswick.